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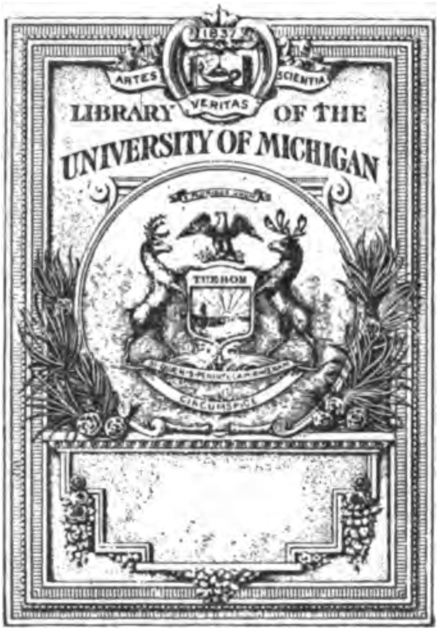

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THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC,

FOR THE YEAR

1873.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

SECOND EDITION.

BUREAU OF NAVIGATION,
WASHINGTON.
1872.

MU

PREFACE.

The preparation of the *American Ephemeris and Nautical Almanac* was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation and the values of the constants adopted will be found in the Preface and Appendix of the first volume, for the year 1855.

In the volume for 1865 the star ephemeris was greatly enlarged; new places of the stars adopted; the form for moon culminations and moon-culminating stars changed so that less space was required; mean solar time, instead of sidereal time, used in the dates of the ephemeris for the meridian of Washington; Bessel's notation in the formulæ for star-reductions substituted for Baily's. Several other changes of less importance were made.

In the volume for 1869 some slight changes were made in the ephemerides of Venus and Mars, and in the arrangement of the stars; and the explanations of the arrangement and use of the tables were revised so as to adapt them to the wants of operators at sea or in the field.

In the volumes for 1870–1873 the ephemeris of Neptune is derived from Newcomb's tables; the ephemerides of the outer planets are given for Washington mean noon instead of sidereal 0^h; and hourly differences, instead of the logarithms, for interpolation; new places adopted for the standard stars; some changes made in the pages of occultations; and the table of positions of Observatories revised.

J. H. C. COFFIN,
Prof. Math. U. S. Navy, Superintendent.

Washington, *November* 1, 1870.

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CONTENTS.

Page
Chronological Eras and Cycles v
Symbols and Abbreviations vi

Ephemeris for the Meridian of Greenwich.

Pages of each Month.
Ephemeris of the Sun . . . . I-III
Ephemeris of the Moon . . . . IV-XII
Lunar Distances . . . . XIII-XVIII
Page.
Ephemerides of the Planets, Venus, Mars, Jupiter, Saturn 218
Sun's Co-ordinates 242
Moon's Longitude and Latitude 245

Ephemeris for the Meridian of Washington.

Obliquity of the Ecliptic, &c. 250
Fixed Stars:
  Logarithms of *A*, *B*, *C*, *D*, for reducing the Places of Fixed Stars 251
  E, *f*, *G*, *H*, &c., " " " " " 254
  Bessel's Formulæ of Reduction 260
  Mean Places for 1873.0 261
  Apparent Places of four Circumpolar Stars 265
  Apparent Places of other fundamental Stars 277
Ephemeris of the Sun 326
Moon Culminations 332
Moon-Culminating Stars 335
Moon's Semidiameter and Horizontal Parallax 339
Moon's Phases, Apogee, Perigee, and Greatest Libration 343
Moon's Equator 344
Table for the Libration of the Moon 345
Ephemerides of the Planets, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune . . 346
Horizontal Parallaxes and Semidiameters of the Planets 388
Sun's Co-ordinates 390
Heliocentric Co-ordinates of the Planets 402
Inclinations, Nodes and Masses of the Planets 409
Eclipses 410
Occultations, visible at Washington 416
" Elements for the prediction of 419
Jupiter's Satellites 452
Saturn's Ring, Discs of Venus and Mars 484
Phenomena, Planetary Constellations 485
Latitudes and Longitudes of Observatories 487
The Arrangement and Use of the Tables 489

Appendix.

Construction of the Ephemerides 1
Table I. Corrections of Lunar Distances for second difference in Moon's motion . . . 7
  II. For converting Sidereal to Mean Time 8
  III. For converting Mean to Sidereal Time 11
  IV. Corrections of Seven Polar Stars for small terms of nutation 14
  V. Corrections of *A* and *B* for terms depending on 2 ☾ 15
  VI. " " " for other small terms of nutation 16

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1873, WHICH COMPRISES THE LATTER PART OF THE 97TH AND THE BEGINNING OF THE 98TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6586 of the Julian Period;
"   7381–82 of the Byzantine era;
"   5633–34 of the Jewish era;
"   2626 since the foundation of Rome, according to Varro;
"   2620 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February, of the 3967th year of the Julian Period, corresponding according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ.
"   2649 of the Olympiads, or the first year of the 663d Olympiad, commencing in July, 1873, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;
"   2185 of the Grecian era, or the era of the Seleucidæ;
"   1589 of the era of Diocletian.

The year 1290 of the Mohammedan era, or the era of the Hegira, begins on the 1st of March, 1873.

The first day of January of the year 1873 is the 2,405,160th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	E	Solar Cycle	6
Epact	1	Roman Indiction	1
Lunar Cycle or Golden Number .	12	Julian Period	6586

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕ or ♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	1.	♈	Aries.	Autumn signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpio.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer signs.	4.	♋	Cancer.	Winter signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌ Conjunction, or having the same Longitude or Right Ascension.
□ Quadrature, or differing 90° in " " "
☍ Opposition, or differing 180° in " " "

ABBREVIATIONS.

☊	Ascending Node.	′	Minutes of Arc.
☋	Descending Node.	″	Seconds of Arc.
N.	North. S. South.	^{h}	Hours.
E.	East. W. West.	^{m}	Minutes of Time.
°	Degrees.	^{s}	Seconds of Time.

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semidiameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	18 48 48.80	11.041	S. 22 58 57.4	12.88	16 18.37	71.05	3 59.08	1.182
Thur.	2	18 53 13.61	11.026	22 53 34.6	14.02	16 18.37	71.01	4 27.25	1.167
Frid.	3	18 57 38.03	11.009	22 47 44.5	15.15	16 18.36	70.96	4 55.03	1.150
Sat.	4	19 2 2.03	10.991	22 41 27.3	16.28	16 18.36	70.91	5 22.41	1.132
Sun.	5	19 6 25.59	10.972	22 34 43.1	17.41	16 18.35	70.85	5 49.35	1.113
Mon.	6	19 10 48.66	10.952	22 27 32.0	18.52	16 18.33	70.79	6 15.78	1.093
Tues.	7	19 15 11.23	10.930	22 19 54.5	19.61	16 18.31	70.72	6 41.73	1.071
Wed.	8	19 19 33.28	10.907	22 11 50.7	20.70	16 18.28	70.65	7 7.14	1.048
Thur.	9	19 23 54.79	10.883	22 3 20.7	21.79	16 18.24	70.58	7 32.02	1.024
Frid.	10	19 28 15.70	10.858	21 54 24.7	22.86	16 18.20	70.50	7 56.30	0.999
Sat.	11	19 32 36.01	10.834	21 45 3.3	23.92	16 18.15	70.42	8 19.99	0.975
Sun.	12	19 36 55.70	10.808	21 35 16.7	24.97	16 18.10	70.34	8 43.06	0.949
Mon.	13	19 41 14.75	10.781	21 25 5.0	26.01	16 18.04	70.25	9 5.49	0.922
Tues.	14	19 45 33.15	10.754	21 14 28.5	27.03	16 17.97	70.16	9 27.27	0.895
Wed.	15	19 49 50.90	10.726	21 3 27.8	28.04	16 17.90	70.07	9 48.40	0.867
Thur.	16	19 54 7.97	10.696	20 52 2.9	29.03	16 17.82	69.97	10 8.86	0.838
Frid.	17	19 58 24.34	10.667	20 40 14.1	30.01	16 17.73	69.88	10 28.62	0.809
Sat.	18	20 2 40.00	10.637	20 28 2.0	30.98	16 17.64	69.78	10 47.67	0.779
Sun.	19	20 6 54.94	10.607	20 15 26.7	31.95	16 17.55	69.68	11 6.01	0.749
Mon.	20	20 11 9.17	10.577	20 2 28.5	32.89	16 17.45	69.57	11 23.64	0.719
Tues.	21	20 15 22.65	10.546	19 49 7.7	33.83	16 17.34	69.46	11 40.51	0.688
Wed.	22	20 19 35.38	10.514	19 35 24.8	34.74	16 17.23	69.35	11 56.63	0.656
Thur.	23	20 23 47.34	10.482	19 21 20.2	35.64	16 17.12	69.24	12 12.00	0.624
Frid.	24	20 27 58.53	10.450	19 6 54.0	36.52	16 17.00	69.13	12 26.59	0.592
Sat.	25	20 32 8.93	10.417	18 52 6.6	37.40	16 16.88	69.02	12 40.39	0.559
Sun.	26	20 36 18.53	10.383	18 36 58.7	38.25	16 16.75	68.91	12 53.41	0.526
Mon.	27	20 40 27.33	10.349	18 21 30.6	39.08	16 16.62	68.80	13 5.62	0.492
Tues.	28	20 44 35.33	10.315	18 5 42.5	39.91	16 16.49	68.68	13 17.02	0.459
Wed.	29	20 48 42.50	10.281	17 49 34.8	40.71	16 16.36	68.57	13 27.59	0.424
Thur.	30	20 52 48.84	10.246	17 33 8.1	41.50	16 16.22	68.45	13 37.34	0.389
Frid.	31	20 56 54.34	10.211	17 16 22.6	42.27	16 16.08	68.34	13 46.28	0.354
Sat.	32	21 0 59.01	10.176	S. 16 59 18.9	43.02	16 15.93	68.23	13 54.37	0.319

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	18 48 48.07	11.038	S. 22 58 58.2	12.87	3 58.99	1.182	18 44 49.08
Thur.	2	18 53 12.80	11.023	22 53 35.6	14.01	4 27.16	1.167	18 48 45.64
Frid.	3	18 57 37.13	11.006	22 47 45.7	15.14	4 54.93	1.150	18 52 42.20
Sat.	4	19 2 1.07	10.988	22 41 28.7	16.27	5 22.31	1.132	18 56 38.76
Sun.	5	19 6 24.55	10.969	22 34 44.7	17.40	5 49.24	1.113	19 0 35.31
Mon.	6	19 10 47.54	10.949	22 27 33.9	18.51	6 15.67	1.093	19 4 31.87
Tues.	7	19 15 10.05	10.927	22 19 56.5	19.60	6 41.62	1.071	19 8 28.43
Wed.	8	19 19 32.01	10.904	22 11 52.9	20.69	7 7.02	1.048	19 12 24.99
Thur.	9	19 23 53.44	10.880	22 3 23.3	21.78	7 31.89	1.024	19 16 21.55
Frid.	10	19 28 14.28	10.855	21 54 27.7	22.85	7 56.17	0.999	19 20 18.11
Sat.	11	19 32 34.52	10.831	21 45 6.6	23.91	8 19.86	0.975	19 24 14.66
Sun.	12	19 36 54.15	10.805	21 35 20.2	24.96	8 42.94	0.949	19 28 11.21
Mon.	13	19 41 13.13	10.778	21 25 8.8	26.00	9 5.35	0.922	19 32 7.78
Tues.	14	19 45 31.47	10.751	21 14 32.7	27.02	9 27.13	0.895	19 36 4.34
Wed.	15	19 49 49.17	10.723	21 3 32.3	28.03	9 48.28	0.867	19 40 0.89
Thur.	16	19 54 6.17	10.694	20 52 7.7	29.02	10 8.72	0.838	19 43 57.45
Frid.	17	19 58 22.49	10.665	20 40 19.3	30.00	10 28.48	0.809	19 47 54.01
Sat.	18	20 2 38.10	10.635	20 28 7.5	30.97	10 47.53	0.779	19 51 50.57
Sun.	19	20 6 52.99	10.605	20 15 32.5	31.94	11 5.87	0.749	19 55 47.12
Mon.	20	20 11 7.17	10.575	20 2 34.5	32.88	11 23.49	0.719	19 59 43.68
Tues.	21	20 15 20.61	10.544	19 49 14.2	33.82	11 40.37	0.688	20 3 40.24
Wed.	22	20 19 33.30	10.512	19 35 31.6	34.73	11 56.50	0.656	20 7 36.80
Thur.	23	20 23 45.22	10.480	19 21 27.3	35.63	12 11.87	0.624	20 11 33.35
Frid.	24	20 27 56.37	10.448	19 7 1.4	36.51	12 26.46	0.592	20 15 29.91
Sat.	25	20 32 6.74	10.415	18 52 14.4	37.39	12 40.27	0.559	20 19 26.47
Sun.	26	20 36 16.31	10.382	18 37 6.8	38.24	12 53.29	0.526	20 23 23.02
Mon.	27	20 40 25.08	10.348	18 21 39.0	39.07	13 5.50	0.492	20 27 19.58
Tues.	28	20 44 33.05	10.314	18 5 51.2	39.90	13 16.91	0.459	20 31 16.14
Wed.	29	20 48 40.20	10.280	17 49 43.8	40.70	13 27.51	0.424	20 35 12.69
Thur.	30	20 52 46.52	10.245	17 33 17.4	41.49	13 37.27	0.389	20 39 9.25
Frid.	31	20 56 52.00	10.210	17 16 32.2	42.26	13 46.19	0.354	20 43 5.81
Sat.	32	21 0 56.65	10.175	S. 16 59 28.9	43.01	13 54.29	0.319	20 47 2.36

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour.
$+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	1	281 13 28.1	13 42.5	152.96	−0.64	9.9926677	− 0.1	5 14 19.27
2	2	282 14 39.3	14 53.5	152.94	0.66	.9926682	+ 0.6	5 10 23.36
3	3	283 15 50.2	16 4.2	152.93	0.66	.9926705	1.4	5 6 27.45
4	4	284 17 0.6	17 14.4	152.91	0.63	.9926744	2.2	5 2 31.53
5	5	285 18 10.6	18 24.2	152.90	0.57	.9926809	3.1	4 58 35.62
6	6	286 19 20.2	19 33.6	152.88	0.49	.9926893	4.0	4 54 39.71
7	7	287 20 29.3	20 42.5	152.86	0.39	.9926999	5.0	4 50 43.80
8	8	288 21 37.8	21 50.8	152.84	0.27	.9927130	6.0	4 46 47.89
9	9	289 22 45.7	22 58.5	152.82	−0.14	.9927287	7.0	4 42 51.98
10	10	290 23 53.2	24 5.9	152.80	0.00	.9927469	8.1	4 38 56.07
11	11	291 25 0.1	25 12.6	152.78	+0.13	.9927676	9.2	4 35 0.16
12	12	292 26 6.4	26 18.7	152.76	0.25	.9927911	10.4	4 31 4.25
13	13	293 27 12.2	27 24.3	152.74	0.34	.9928174	11.6	4 27 8.34
14	14	294 28 17.6	28 29.5	152.72	0.41	.9928466	12.8	4 23 12.43
15	15	295 29 22.5	29 34.3	152.70	0.47	.9928786	14.0	4 19 16.51
16	16	296 30 26.9	30 38.5	152.68	0.49	.9929134	15.1	4 15 20.59
17	17	297 31 30.9	31 42.3	152.66	0.48	.9929508	16.2	4 11 24.68
18	18	298 32 34.5	32 45.7	152.64	0.43	.9929908	17.2	4 7 28.77
19	19	299 33 37.7	33 48.8	152.62	0.35	.9930334	18.2	4 3 32.86
20	20	300 34 40.5	34 51.5	152.60	0.25	.9930783	19.1	3 59 36.95
21	21	301 35 42.8	35 53.6	152.58	+0.13	.9931254	20.0	3 55 41.04
22	22	302 36 44.7	36 55.3	152.56	0.00	.9931746	20.9	3 51 45.13
23	23	303 37 46.0	37 56.4	152.54	−0.13	.9932258	21.7	3 47 49.21
24	24	304 38 46.7	38 57.0	152.51	0.26	.9932788	22.4	3 43 53.30
25	25	305 39 46.8	39 57.0	152.48	0.39	.9933334	23.1	3 39 57.39
26	26	306 40 46.2	40 56.2	152.45	0.50	.9933895	23.7	3 36 1.48
27	27	307 41 44.8	41 54.6	152.42	0.59	.9934471	24.3	3 32 5.57
28	28	308 42 42.5	42 52.1	152.38	0.66	.9935063	24.9	3 28 9.65
29	29	309 43 39.2	43 48.7	152.34	0.71	.9935668	25.5	3 24 13.74
30	30	310 44 34.8	44 44.2	152.29	0.72	.9936286	26.0	3 20 17.83
31	31	311 45 29.2	45 38.4	152.24	0.69	.9936918	26.6	3 16 21.92
32	32	312 46 22.3	46 31.3	152.18	−0.62	9.9937564	+27.2	3 12 26.02

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
$-9^s.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 36.3	16 33.7	60 50.1	−0.64	60 40.5	−0.95	2 26.5	2.51	2.2
2	16 30.1	16 25.7	60 27.4	1.23	60 11.2	1.46	3 24.5	2.31	3.2
3	16 20.6	16 15.0	59 52.5	1.64	59 31.9	1.77	4 17.9	2.13	4.2
4	16 9.1	16 2.9	59 10.0	1.86	58 47.4	1.90	5 7.6	2.01	5.2
5	15 56.7	15 50.5	58 24.5	1.91	58 1.7	1.88	5 54.9	1.94	6.2
6	15 44.4	15 38.5	57 39.4	1.83	57 17.8	1.76	6 41.1	1.92	7.2
7	15 32.9	15 27.5	56 57.1	1.68	56 37.5	1.59	7 27.4	1.95	8.2
8	15 22.5	15 17.8	56 19.0	1.49	56 1.6	1.40	8 14.8	2.01	9.2
9	15 13.4	15 9.3	55 45.4	1.30	55 30.4	1.20	9 3.8	2.08	10.2
10	15 5.5	15 2.1	55 16.6	1.10	55 3.9	1.01	9 54.5	2.14	11.2
11	14 58.9	14 56.0	54 52.3	0.92	54 41.8	0.83	10 46.2	2.16	12.2
12	14 53.5	14 51.2	54 32.3	0.74	54 23.9	0.65	11 37.9	2.14	13.2
13	14 49.2	14 47.5	54 16.6	0.56	54 10.4	0.47	12 28.5	2.07	14.2
14	14 46.1	14 45.1	54 5.4	0.37	54 1.6	0.26	13 17.0	1.97	15.2
15	14 44.3	14 44.1	53 59.1	−0.14	53 58.1	−0.02	14 3.0	1.86	16.2
16	14 44.3	14 44.9	53 58.6	+0.11	54 0.8	+0.25	14 46.6	1.77	17.2
17	14 45.9	14 47.6	54 4.8	0.40	54 10.6	0.57	15 28.4	1.71	18.2
18	14 49.7	14 52.4	54 18.5	0.74	54 28.5	0.92	16 9.1	1.69	19.2
19	14 55.7	14 59.6	54 40.6	1.11	54 55.0	1.29	16 49.7	1.70	20.2
20	15 4.2	15 9.3	55 11.7	1.48	55 30.6	1.67	17 31.3	1.77	21.2
21	15 15.1	15 21.4	55 51.7	1.85	56 14.9	2.02	18 15.2	1.90	22.2
22	15 28.2	15 35.5	56 40.1	2.17	57 6.9	2.30	19 2.7	2.07	23.2
23	15 43.2	15 51.2	57 35.1	2.39	58 4.2	2.45	19 54.9	2.29	24.2
24	15 59.2	16 7.2	58 33.8	2.46	59 3.1	2.42	20 52.5	2.52	25.2
25	16 14.9	16 22.2	59 31.5	2.31	59 58.3	2.14	21 55.0	2.66	26.2
26	16 28.9	16 34.7	60 22.8	1.91	60 44.1	1.63	23 0.1	2.70	27.2
27	16 39.5	16 43.1	61 1.6	1.29	61 14.9	0.91	δ		28.2
28	16 45.4	16 46.2	61 23.3	+0.49	61 26.5	+0.05	0 5.1	2.64	29.2
29	16 45.7	16 43.8	61 24.5	−0.38	61 17.5	−0.79	1 7.2	2.49	0.8
30	16 40.6	16 36.2	61 5.8	1.16	60 49.8	1.49	2 4.5	2.30	1.8
31	16 30.9	16 24.7	60 30.1	1.78	60 7.3	2.01	2 57.8	2.14	2.8
32	16 17.8	16 10.5	59 42.1	−2.17	59 15.3	−2.28	3 48.0	2.04	3.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 5 22.60	2.5964	S.21 43 52.6	9.691
1	21 7 58.18	2.5895	21 34 6.7	9.838
2	21 10 33.34	2.5825	21 24 12.0	9.983
3	21 13 8.07	2.5754	21 14 8.7	10.126
4	21 15 42.38	2.5683	21 3 56.9	10.267
5	21 18 16.26	2.5612	20 53 36.6	10.406
6	21 20 49.72	2.5540	20 43 8.0	10.543
7	21 23 22.74	2.5467	20 32 31.3	10.678
8	21 25 55.32	2.5394	20 21 46.6	10.811
9	21 28 27.46	2.5321	20 10 53.8	10.942
10	21 30 59.16	2.5248	19 59 53.2	11.071
11	21 33 30.42	2.5174	19 48 45.0	11.198
12	21 36 1.24	2.5100	19 37 29.3	11.323
13	21 38 31.61	2.5025	19 26 6.2	11.446
14	21 41 1.54	2.4951	19 14 35.7	11.567
15	21 43 31.02	2.4877	19 2 58.0	11.686
16	21 46 0.06	2.4803	18 51 13.3	11.803
17	21 48 28.65	2.4728	18 39 21.6	11.918
18	21 50 56.79	2.4653	18 27 23.1	12.031
19	21 53 24.49	2.4578	18 15 17.9	12.142
20	21 55 51.74	2.4504	18 3 6.2	12.250
21	21 58 18.54	2.4430	17 50 48.0	12.355
22	22 0 44.90	2.4356	17 38 23.5	12.459
23	22 3 10.82	2.4283	S.17 25 52.8	12.561

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 5 36.30	2.4210	S.17 13 16.0	12.662
1	22 8 1.33	2.4136	17 0 33.2	12.760
2	22 10 25.92	2.4063	16 47 44.7	12.856
3	22 12 50.08	2.3990	16 34 50.5	12.950
4	22 15 13.80	2.3917	16 21 50.7	13.042
5	22 17 37.08	2.3845	16 8 45.5	13.132
6	22 19 59.93	2.3773	15 55 34.9	13.220
7	22 22 22.35	2.3701	15 42 19.1	13.306
8	22 24 44.34	2.3629	15 28 58.2	13.390
9	22 27 5.90	2.3557	15 15 32.3	13.472
10	22 29 27.04	2.3487	15 2 1.5	13.552
11	22 31 47.76	2.3417	14 48 26.1	13.630
12	22 34 8.06	2.3347	14 34 46.0	13.706
13	22 36 27.94	2.3279	14 21 1.4	13.780
14	22 38 47.41	2.3211	14 7 12.5	13.852
15	22 41 6.48	2.3144	13 53 19.2	13.922
16	22 43 25.14	2.3077	13 39 21.7	13.990
17	22 45 43.40	2.3011	13 25 20.3	14.056
18	22 48 1.27	2.2945	13 11 15.1	14.121
19	22 50 18.73	2.2879	12 57 6.0	14.184
20	22 52 35.81	2.2815	12 42 53.1	14.245
21	22 54 52.51	2.2751	12 28 36.6	14.303
22	22 57 8.82	2.2687	12 14 16.7	14.359
23	22 59 24.75	2.2625	11 59 53.4	14.414
24	23 1 40.31	2.2563	S.11 45 26.9	14.467

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 1 40.31	2.2563	S.11 45 26.9	14.467
1	23 3 55.49	2.2501	11 30 57.2	14.519
2	23 6 10.31	2.2440	11 16 24.5	14.569
3	23 8 24.77	2.2380	11 1 48.9	14.617
4	23 10 38.87	2.2321	10 47 10.4	14.663
5	23 12 52.62	2.2263	10 32 29.2	14.707
6	23 15 6.02	2.2205	10 17 45.4	14.750
7	23 17 19.07	2.2147	10 2 59.1	14.791
8	23 19 31.79	2.2091	9 48 10.4	14.830
9	23 21 44.17	2.2036	9 33 19.3	14.869
10	23 23 56.22	2.1982	9 18 26.0	14.905
11	23 26 7.95	2.1928	9 3 30.7	14.939
12	23 28 19.35	2.1876	8 48 33.4	14.971
13	23 30 30.44	2.1824	8 33 34.1	15.003
14	23 32 41.22	2.1772	8 18 33.0	15.033
15	23 34 51.70	2.1722	8 3 30.3	15.060
16	23 37 1.87	2.1672	7 48 25.9	15.086
17	23 39 11.75	2.1622	7 33 20.0	15.110
18	23 41 21.33	2.1574	7 18 12.7	15.133
19	23 43 30.63	2.1526	7 3 4.0	15.155
20	23 45 39.65	2.1480	6 47 54.1	15.175
21	23 47 48.39	2.1434	6 32 43.0	15.193
22	23 49 56.86	2.1390	6 17 30.8	15.210
23	23 52 5.07	2.1346	S. 6 2 17.7	15.225

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 54 13.02	2.1303	S. 5 47 3.8	15.239
1	23 56 20.71	2.1261	5 31 49.1	15.252
2	23 58 28.16	2.1220	5 16 33.6	15.263
3	0 0 35.36	2.1180	5 1 17.4	15.273
4	0 2 42.32	2.1141	4 46 0.7	15.281
5	0 4 49.05	2.1103	4 30 43.7	15.287
6	0 6 55.55	2.1065	4 15 26.3	15.292
7	0 9 1.83	2.1029	4 0 8.6	15.296
8	0 11 7.89	2.0993	3 44 50.7	15.299
9	0 13 13.73	2.0958	3 29 32.6	15.300
10	0 15 19.36	2.0923	3 14 14.5	15.300
11	0 17 24.79	2.0889	2 58 56.5	15.299
12	0 19 30.03	2.0856	2 43 38.6	15.296
13	0 21 35.08	2.0824	2 28 20.9	15.292
14	0 23 39.94	2.0794	2 13 3.5	15.287
15	0 25 44.61	2.0764	1 57 46.4	15.280
16	0 27 49.10	2.0735	1 42 29.8	15.272
17	0 29 53.43	2.0707	1 27 13.7	15.263
18	0 31 57.59	2.0680	1 11 58.1	15.253
19	0 34 1.59	2.0654	0 56 43.2	15.242
20	0 36 5.44	2.0629	0 41 29.1	15.229
21	0 38 9.13	2.0604	0 26 15.7	15.215
22	0 40 12.68	2.0580	S. 0 11 3.2	15.200
23	0 42 16.09	2.0557	N. 0 4 8.3	15.183
24	0 44 19.37	2.0535	N. 0 19 18.8	15.166

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 44 19.37	2.0535	N. 0 19 18.8	15.166
1	0 46 22.51	2.0513	0 34 28.2	15.147
2	0 48 25.53	2.0493	0 49 36.4	15.127
3	0 50 28.43	2.0474	1 4 43.4	15.106
4	0 52 31.22	2.0456	1 19 49.1	15.084
5	0 54 33.90	2.0438	1 34 53.4	15.060
6	0 56 36.47	2.0421	1 49 56.3	15.036
7	0 58 38.95	2.0405	2 4 57.7	15.010
8	1 0 41.33	2.0390	2 19 57.5	14.982
9	1 2 43.61	2.0375	2 34 55.6	14.954
10	1 4 45.82	2.0361	2 49 52.0	14.925
11	1 6 47.94	2.0348	3 4 46.6	14.896
12	1 8 49.98	2.0336	3 19 39.5	14.864
13	1 10 51.96	2.0325	3 34 30.5	14.832
14	1 12 53.87	2.0314	3 49 19.4	14.799
15	1 14 55.72	2.0304	4 4 6.3	14.764
16	1 16 57.52	2.0295	4 18 51.1	14.729
17	1 18 59.27	2.0287	4 33 33.8	14.692
18	1 21 0.96	2.0280	4 48 14.3	14.654
19	1 23 2.61	2.0273	5 2 52.5	14.616
20	1 25 4.23	2.0268	5 17 28.3	14.577
21	1 27 5.82	2.0263	5 32 1.8	14.536
22	1 29 7.38	2.0258	5 46 32.8	14.495
23	1 31 8.92	2.0254	N. 6 1 1.2	14.452

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 33 10.43	2.0251	N. 6 15 27.1	14.408
1	1 35 11.93	2.0249	6 29 50.3	14.364
2	1 37 13.42	2.0248	6 44 10.8	14.319
3	1 39 14.91	2.0247	6 58 28.6	14.272
4	1 41 16.40	2.0248	7 12 43.5	14.225
5	1 43 17.89	2.0250	7 26 55.5	14.176
6	1 45 19.37	2.0251	7 41 4.7	14.126
7	1 47 20.87	2.0253	7 55 10.9	14.076
8	1 49 22.39	2.0256	8 9 14.0	14.025
9	1 51 23.94	2.0260	8 23 13.9	13.972
10	1 53 25.51	2.0264	8 37 10.7	13.919
11	1 55 27.11	2.0269	8 51 4.2	13.864
12	1 57 28.73	2.0275	9 4 54.5	13.809
13	1 59 30.39	2.0281	9 18 41.5	13.753
14	2 1 32.09	2.0288	9 32 25.0	13.696
15	2 3 33.84	2.0296	9 46 5.0	13.638
16	2 5 35.63	2.0304	9 59 41.5	13.580
17	2 7 37.48	2.0313	10 13 14.5	13.520
18	2 9 39.38	2.0322	10 26 44.0	13.459
19	2 11 41.34	2.0332	10 40 9.8	13.397
20	2 13 43.36	2.0343	10 53 31.8	13.334
21	2 15 45.45	2.0354	11 6 49.9	13.270
22	2 17 47.61	2.0366	11 20 4.2	13.206
23	2 19 49.84	2.0378	11 33 14.6	13.142
24	2 21 52.14	2.0391	N. 11 46 21.2	13.076

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 21 52.14	2.0391	N. 11 46 21.2	13.076
1	2 23 54.53	2.0405	11 59 23.8	13.008
2	2 25 57.00	2.0419	12 12 22.2	12.940
3	2 27 59.56	2.0434	12 25 16.5	12.871
4	2 30 2.21	2.0449	12 38 6.7	12.801
5	2 32 4.95	2.0465	12 50 52.7	12.731
6	2 34 7.78	2.0481	13 3 34.4	12.659
7	2 36 10.71	2.0497	13 16 11.8	12.587
8	2 38 13.75	2.0514	13 28 44.8	12.513
9	2 40 16.90	2.0532	13 41 13.4	12.439
10	2 42 20.15	2.0550	13 53 37.5	12.364
11	2 44 23.51	2.0569	14 5 57.1	12.289
12	2 46 26.99	2.0588	14 18 12.2	12.212
13	2 48 30.58	2.0608	14 30 22.6	12.134
14	2 50 34.29	2.0629	14 42 28.3	12.055
15	2 52 38.13	2.0650	14 54 29.3	11.976
16	2 54 42.09	2.0671	15 6 25.5	11.896
17	2 56 46.17	2.0693	15 18 16.8	11.815
18	2 58 50.38	2.0715	15 30 3.3	11.733
19	3 0 54.72	2.0738	15 41 44.8	11.650
20	3 2 59.20	2.0760	15 53 21.3	11.566
21	3 5 3.82	2.0783	16 4 52.8	11.482
22	3 7 8.57	2.0806	16 16 19.2	11.397
23	3 9 13.46	2.0830	N. 16 27 40.4	11.311

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 11 18.49	2.0853	N. 16 38 56.5	11.224
1	3 13 23.67	2.0877	16 50 7.4	11.137
2	3 15 28.99	2.0900	17 1 12.9	11.048
3	3 17 34.46	2.0924	17 12 13.1	10.958
4	3 19 40.08	2.0949	17 23 7.9	10.868
5	3 21 45.85	2.0974	17 33 57.2	10.777
6	3 23 51.76	2.0999	17 44 41.1	10.685
7	3 25 57.83	2.1025	17 55 19.5	10.593
8	3 28 4.06	2.1050	18 5 52.2	10.499
9	3 30 10.44	2.1076	18 16 19.3	10.404
10	3 32 16.97	2.1102	18 26 40.7	0.309
11	3 34 23.66	2.1129	18 36 56.4	0.213
12	3 36 30.52	2.1155	18 47 6.3	0.116
13	3 38 37.54	2.1182	18 57 10.4	0.019
14	3 40 44.72	2.1209	19 7 8.6	9.921
15	3 42 52.05	2.1236	19 17 0.9	9.822
16	3 44 59.54	2.1263	19 26 47.3	9.722
17	3 47 7.20	2.1291	19 36 27.6	9.622
18	3 49 15.02	2.1318	19 46 1.9	9.520
19	3 51 23.01	2.1345	19 55 30.1	9.418
20	3 53 31.16	2.1372	20 4 52.2	9.315
21	3 55 39.47	2.1399	20 14 8.0	9.212
32	3 57 47.94	2.1426	20 23 17.6	9.107
23	3 59 56.58	2.1454	20 32 20.9	9.002
24	4 2 5.39	2.1481	N. 20 41 17.9	8.896

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 2 5.39	2.1481	N.20 41 17.9	8.896
1	4 4 14.36	2.1508	20 50 8.5	8.790
2	4 6 23.49	2.1535	20 58 52.7	8.683
3	4 8 32.78	2.1562	21 7 30.5	8.575
4	4 10 42.24	2.1589	21 16 1.7	8.466
5	4 12 51.86	2.1617	21 24 26.4	8.356
6	4 15 1.64	2.1644	21 32 44.5	8.246
7	4 17 11.59	2.1671	21 40 56.0	8.135
8	4 19 21.69	2.1697	21 49 0.8	8.023
9	4 21 31.95	2.1723	21 56 58.9	7.911
10	4 23 42.36	2.1750	22 4 50.2	7.799
11	4 25 52.93	2.1776	22 12 34.8	7.686
12	4 28 3.66	2.1802	22 20 12.6	7.572
13	4 30 14.55	2.1826	22 27 43.5	7.457
14	4 32 25.59	2.1853	22 35 7.5	7.342
15	4 34 36.77	2.1878	22 42 24.5	7.226
16	4 36 48.11	2.1903	22 49 34.6	7.109
17	4 38 59.60	2.1927	22 56 37.6	6.992
18	4 41 11.23	2.1951	23 3 33.6	6.874
19	4 43 23.01	2.1975	23 10 22.5	6.756
20	4 45 34.93	2.1999	23 17 4.3	6.637
21	4 47 46.99	2.2022	23 23 38.9	6.517
22	4 49 59.19	2.2045	23 30 6.3	6.397
23	4 52 11.53	2.2067	N.23 36 26.5	6.277

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 54 24.00	2.2089	N.23 42 39.5	6.156
1	4 56 36.61	2.2111	23 48 45.2	6.034
2	4 58 49.34	2.2132	23 54 43.6	5.911
3	5 1 2.20	2.2153	24 0 34.6	5.788
4	5 3 15.18	2.2174	24 6 18.2	5.665
5	5 5 28.28	2.2194	24 11 54.4	5.542
6	5 7 41.51	2.2213	24 17 23.2	5.418
7	5 9 54.85	2.2232	24 22 44.5	5.293
8	5 12 8.30	2.2251	24 27 58.3	5.168
9	5 14 21.87	2.2269	24 33 4.6	5.043
10	5 16 35.54	2.2286	24 38 3.4	4.917
11	5 18 49.31	2.2303	24 42 54.6	4.790
12	5 21 3.18	2.2320	24 47 38.2	4.663
13	5 23 17.15	2.2336	24 52 14.2	4.536
14	5 25 31.21	2.2351	24 56 42.5	4.409
15	5 27 45.37	2.2366	25 1 3.2	4.281
16	5 29 59.61	2.2380	25 5 16.3	4.153
17	5 32 13.93	2.2393	25 9 21.6	4.024
18	5 34 28.32	2.2406	25 13 19.2	3.895
19	5 36 42.80	2.2418	25 17 9.1	3.766
20	5 38 57.35	2.2429	25 20 51.2	3.637
21	5 41 11.96	2.2440	25 24 25.5	3.507
22	5 43 26.63	2.2451	25 27 52.0	3.378
23	5 45 41.36	2.2461	25 31 10.7	3.248
24	5 47 56.16	2.2470	N.25 34 21.7	3.118

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 47 56.16	2.2470	N.25 34 21.7	3.118
1	5 50 11.01	2.2479	25 37 24.8	2.987
2	5 52 25.90	2.2486	25 40 20.0	2.856
3	5 54 40.83	2.2492	25 43 7.4	2.724
4	5 56 55.80	2.2498	25 45 46.9	2.593
5	5 59 10.80	2.2503	25 48 18.5	2.461
6	6 1 25.83	2.2507	25 50 42.3	2.330
7	6 3 40.89	2.2511	25 52 58.2	2.198
8	6 5 55.97	2.2514	25 55 6.1	2.066
9	6 8 11.06	2.2516	25 57 6.1	1.934
10	6 10 26.16	2.2518	25 58 58.2	1.803
11	6 12 41.27	2.2519	26 0 42.4	1.671
12	6 14 56.39	2.2519	26 2 18.8	1.530
13	6 17 11.51	2.2519	26 3 47.2	1.407
14	6 19 26.62	2.2517	26 5 7.7	1.275
15	6 21 41.71	2.2514	26 6 20.2	1.143
16	6 23 56.79	2.2511	26 7 24.8	1.012
17	6 26 11.85	2.2508	26 8 21.5	0.880
18	6 28 26.89	2.2504	26 9 10.4	0.748
19	6 30 41.90	2.2499	26 9 51.3	0.616
20	6 32 56.87	2.2493	26 10 24.3	0.484
21	6 35 11.81	2.2486	26 10 49.4	0.353
22	6 37 26.70	2.2478	26 11 6.6	0.221
23	6 39 41.54	2.2469	N.26 11 15.9	+0.089

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 41 56.33	2.2460	N.26 11 17.3	−0.042
1	6 44 11.06	2.2450	26 11 10.8	0.173
2	6 46 25.73	2.2440	26 10 56.5	0.303
3	6 48 40.34	2.2429	26 10 34.5	0.433
4	6 50 54.88	2.2416	26 10 4.6	0.564
5	6 53 9.34	2.2403	26 9 26.8	0.695
6	6 55 23.71	2.2389	26 8 41.2	0.825
7	6 57 38.00	2.2375	26 7 47.8	0.954
8	6 59 52.20	2.2360	26 6 46.7	1.084
9	7 2 6.31	2.2344	26 5 37.8	1.213
10	7 4 20.32	2.2327	26 4 21.1	1.341
11	7 6 34.23	2.2309	26 2 56.8	1.469
12	7 8 48.03	2.2291	26 1 24.8	1.598
13	7 11 1.72	2.2272	25 59 45.1	1.726
14	7 13 15.29	2.2252	25 57 57.7	1.853
15	7 15 28.75	2.2232	25 56 2.7	1.980
16	7 17 42.08	2.2211	25 54 0.1	2.107
17	7 19 55.28	2.2189	25 51 49.9	2.233
18	7 22 8.35	2.2167	25 49 32.1	2.359
19	7 24 21.29	2.2145	25 47 6.8	2.484
20	7 26 34.08	2.2121	25 44 34.0	2.609
21	7 28 46.73	2.2096	25 41 53.7	2.734
22	7 30 59.23	2.2071	25 39 5.9	2.858
23	7 33 11.58	2.2045	25 36 10.7	2.982
24	7 35 23.77	2.2019	N.25 33 8.1	3.105

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 13.					WEDNESDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 35 23.77	2.2019	N.25 33 8.1	3.105	0	9 17 11.77	2.0288	N.20 54 11.6	8.242
1	7 37 35.81	2.1992	25 29 58.1	3.228	1	9 19 13.37	2.0248	20 45 54.4	8.331
2	7 39 47.68	2.1964	25 26 40.8	3.350	2	9 21 14.73	2.0207	20 37 31.9	8.419
3	7 41 59.38	2.1936	25 23 16.2	3.471	3	9 23 15.85	2.0167	20 29 4.1	8.506
4	7 44 10.92	2.1908	25 19 44.3	3.592	4	9 25 16.73	2.0127	20 20 31.2	8.592
5	7 46 22.28	2.1879	25 16 5.2	3.712	5	9 27 17.37	2.0086	20 11 53.2	8.677
6	7 48 33.47	2.1850	25 12 18.9	3.832	6	9 29 17.76	2.0046	20 3 10.0	8.761
7	7 50 44.48	2.1820	25 8 25.4	3.951	7	9 31 17.91	2.0006	19 54 21.8	8.845
8	7 52 55.30	2.1789	25 4 24.8	4.070	8	9 33 17.83	1.9967	19 45 28.6	8.927
9	7 55 5.94	2.1758	25 0 17.0	4.189	9	9 35 17.52	1.9927	19 36 30.5	9.009
10	7 57 16.39	2.1726	24 56 2.1	4.306	10	9 37 16.97	1.9888	19 27 27.5	9.091
11	7 59 26.65	2.1693	24 51 40.3	4.422	11	9 39 16.18	1.9849	19 18 19.6	9.172
12	8 1 36.71	2.1660	24 47 11.5	4.538	12	9 41 15.16	1.9810	19 9 6.9	9.251
13	8 3 46.57	2.1627	24 42 35.8	4.654	13	9 43 13.90	1.9771	18 59 49.5	9.329
14	8 5 56.23	2.1593	24 37 53.1	4.769	14	9 45 12.41	1.9733	18 50 27.4	9.407
15	8 8 5.70	2.1559	24 33 3.5	4.883	15	9 47 10.70	1.9695	18 41 0.6	9.485
16	8 10 14.96	2.1525	24 28 7.1	4.997	16	9 49 8.76	1.9658	18 31 29.2	9.561
17	8 12 24.01	2.1490	24 23 3.9	5.110	17	9 51 6.59	1.9620	18 21 53.3	9.637
18	8 14 32.84	2.1454	24 17 53.9	5.222	18	9 53 4.19	1.9582	18 12 12.8	9.711
19	8 16 41.46	2.1419	24 12 37.2	5.333	19	9 55 1.57	1.9544	18 2 27.9	9.785
20	8 18 49.87	2.1383	24 7 13.9	5.444	20	9 56 58.72	1.9507	17 52 38.6	9.858
21	8 20 58.07	2.1347	24 1 43.9	5.555	21	9 58 55.65	1.9470	17 42 44.9	9.930
22	8 23 6.04	2.1310	23 56 7.3	5.664	22	10 0 52.36	1.9434	17 32 47.0	10.002
23	8 25 13.79	2.1273	N.23 50 24.2	5.772	23	10 2 48.85	1.9398	N.17 22 44.8	10.073
	TUESDAY 14.					THURSDAY 16.			
0	8 27 21.32	2.1236	N.23 44 34.7	5.880	0	10 4 45.13	1.9362	N.17 12 38.3	10.143
1	8 29 28.62	2.1199	23 38 38.7	5.988	1	10 6 41.19	1.9326	17 2 27.6	10.212
2	8 31 35.70	2.1161	23 32 36.2	6.094	2	10 8 37.04	1.9290	16 52 12.9	10.281
3	8 33 42.55	2.1123	23 26 27.3	6.200	3	10 10 32.68	1.9255	16 41 54.1	10.348
4	8 35 49.17	2.1084	23 20 12.1	6.305	4	10 12 28.11	1.9221	16 31 31.2	10.414
5	8 37 55.56	2.1045	23 13 50.7	6.409	5	10 14 23.33	1.9187	16 21 4.4	10.480
6	8 40 1.71	2.1006	23 7 23.0	6.513	6	10 16 18.35	1.9153	16 10 33.6	10.545
7	8 42 7.63	2.0967	23 0 49.1	6.616	7	10 18 13.17	1.9120	15 59 58.9	10.610
8	8 44 13.32	2.0928	22 54 9.1	6.718	8	10 20 7.79	1.9087	15 49 20.4	10.673
9	8 46 18.77	2.0889	22 47 23.0	6.819	9	10 22 2.20	1.9054	15 38 38.2	10.735
10	8 48 23.98	2.0849	22 40 30.8	6.919	10	10 23 56.42	1.9022	15 27 52.2	10.798
11	8 50 28.96	2.0810	22 33 32.6	7.019	11	10 25 50.45	1.8990	15 17 2.5	10.860
12	8 52 33.70	2.0770	22 26 28.5	7.118	12	10 27 44.30	1.8959	15 6 9.0	10.921
13	8 54 38.20	2.0730	22 19 18.5	7.216	13	10 29 37.96	1.8927	14 55 11.9	10.981
14	8 56 42.46	2.0690	22 12 2.6	7.313	14	10 31 31.43	1.8896	14 44 11.3	11.039
15	8 58 46.48	2.0650	22 4 40.9	7.410	15	10 33 24.70	1.8865	14 33 7.3	11.096
16	9 0 50.26	2.0610	21 57 13.4	7.506	16	10 35 17.79	1.8835	14 21 59.8	11.154
17	9 2 53.80	2.0569	21 49 40.2	7.601	17	10 37 10.72	1.8806	14 10 48.8	11.212
18	9 4 57.09	2.0528	21 42 1.3	7.695	18	10 39 3.48	1.8778	13 59 34.3	11.268
19	9 7 0.14	2.0488	21 34 16.8	7.788	19	10 40 56.06	1.8749	13 48 16.5	11.323
20	9 9 2.95	2.0448	21 26 26.7	7.881	20	10 42 48.47	1.8721	13 36 55.5	11.377
21	9 11 5.52	2.0408	21 18 31.1	7.973	21	10 44 40.71	1.8693	13 25 31.3	11.430
22	9 13 7.84	2.0367	21 10 30.0	8.063	22	10 46 32.79	1.8666	13 14 3.9	11.484
23	9 15 9.92	2.0327	21 2 23.5	8.153	23	10 48 24.71	1.8639	13 2 33.3	11.537
24	9 17 11.77	2.0288	N.20 54 11.6	8.242	24	10 50 16.46	1.8613	N.12 50 59.4	11.590

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 50 16.46	1.8613	N.12 50 59.4	11.590
1	10 52 8.06	1.8588	12 39 22.4	11.641
2	10 53 59.52	1.8564	12 27 42.5	11.690
3	10 55 50.83	1.8539	12 15 59.8	11.738
4	10 57 41.99	1.8515	12 4 14.1	11.787
5	10 59 33.01	1.8491	11 52 25.4	11.836
6	11 1 23.88	1.8467	11 40 33.7	11.884
7	11 3 14.62	1.8445	11 28 39.2	11.930
8	11 5 5.23	1.8424	11 16 42.0	11.975
9	11 6 55.71	1.8403	11 4 42.2	12.019
10	11 8 46.06	1.8382	10 52 39.7	12.064
11	11 10 36.29	1.8362	10 40 34.4	12.109
12	11 12 26.41	1.8343	10 28 26.5	12.152
13	11 14 16.41	1.8324	10 16 16.1	12.191
14	11 16 6.29	1.8305	10 4 3.2	12.236
15	11 17 56.06	1.8287	9 51 47.7	12.278
16	11 19 45.73	1.8270	9 39 29.8	12.318
17	11 21 35.30	1.8253	9 27 9.6	12.357
18	11 23 24.77	1.8237	9 14 47.0	12.396
19	11 25 14.14	1.8221	9 2 22.1	12.434
20	11 27 3.42	1.8206	8 49 54.9	12.471
21	11 28 52.61	1.8192	8 37 25.5	12.508
22	11 30 41.72	1.8178	8 24 53.9	12.545
23	11 32 30.75	1.8165	N. 8 12 20.1	12.581

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 34 19.70	1.8152	N. 7 59 44.2	12.616
1	11 36 8.58	1.8140	7 47 6.2	12.650
2	11 37 57.39	1.8129	7 34 26.2	12.683
3	11 39 46.13	1.8118	7 21 44.3	12.715
4	11 41 34.81	1.8108	7 9 0.4	12.748
5	11 43 23.44	1.8099	6 56 14.6	12.780
6	11 45 12.01	1.8091	6 43 26.8	12.811
7	11 47 0.53	1.8083	6 30 37.2	12.841
8	11 48 49.01	1.8076	6 17 45.9	12.870
9	11 50 37.44	1.8069	6 4 52.8	12.899
10	11 52 25.83	1.8063	5 51 58.0	12.927
11	11 54 14.19	1.8058	5 39 1.5	12.955
12	11 56 2.52	1.8053	5 26 3.4	12.982
13	11 57 50.82	1.8049	5 13 3.7	13.008
14	11 59 39.10	1.8046	5 0 2.5	13.034
15	12 1 27.37	1.8043	4 46 59.7	13.059
16	12 3 15.62	1.8041	4 33 55.4	13.083
17	12 5 3.86	1.8039	4 20 49.7	13.106
18	12 6 52.09	1.8038	4 7 42.7	13.129
19	12 8 40.32	1.8039	3 54 34.3	13.151
20	12 10 28.56	1.8040	3 41 24.6	13.173
21	12 12 16.80	1.8042	3 28 13.5	13.195
22	12 14 5.05	1.8044	3 15 1.2	13.215
23	12 15 53.32	1.8047	3 1 47.8	13.234
24	12 17 41.61	1.8050	N. 2 48 33.2	13.253

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 17 41.61	1.8050	N. 2 48 33.2	13.253
1	12 19 29.92	1.8055	2 35 17.5	13.271
2	12 21 18.26	1.8060	2 22 0.7	13.288
3	12 23 6.63	1.8066	2 8 42.9	13.305
4	12 24 55.04	1.8072	1 55 24.1	13.322
5	12 26 43.49	1.8079	1 42 4.3	13.338
6	12 28 31.99	1.8087	1 28 43.6	13.353
7	12 30 20.54	1.8096	1 15 22.0	13.367
8	12 32 9.14	1.8105	1 1 59.6	13.380
9	12 33 57.79	1.8115	0 48 36.5	13.392
10	12 35 46.51	1.8126	0 35 12.6	13.404
11	12 37 35.30	1.8138	0 21 48.0	13.416
12	12 39 24.16	1.8150	N. 0 8 22.7	13.427
13	12 41 13.10	1.8164	S. 0 5 3.2	13.437
14	12 43 2.12	1.8178	0 18 29.7	13.447
15	12 44 51.22	1.8193	0 31 56.8	13.456
16	12 46 40.41	1.8208	0 45 24.4	13.463
17	12 48 29.70	1.8224	0 58 52.4	13.469
18	12 50 19.09	1.8241	1 12 20.7	13.476
19	12 52 8.58	1.8259	1 25 49.4	13.482
20	12 53 58.18	1.8277	1 39 18.5	13.488
21	12 55 47.90	1.8296	1 52 48.0	13.493
22	12 57 37.73	1.8316	2 6 17.7	13.496
23	12 59 27.68	1.8337	S. 2 19 47.5	13.498

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 1 17.77	1.8358	S. 2 33 17.4	13.500
1	13 3 7.99	1.8381	2 46 47.4	13.502
2	13 4 58.34	1.8404	3 0 17.6	13.503
3	13 6 48.83	1.8428	3 13 47.8	13.503
4	13 8 39.47	1.8453	3 27 18.0	13.501
5	13 10 30.26	1.8479	3 40 48.0	13.499
6	13 12 21.21	1.8506	3 54 17.9	13.497
7	13 14 12.32	1.8533	4 7 47.6	13.494
8	13 16 3.59	1.8560	4 21 17.2	13.490
9	13 17 55.03	1.8589	4 34 46.5	13.486
10	13 19 46.65	1.8618	4 48 15.5	13.480
11	13 21 38.45	1.8648	5 1 44.1	13.473
12	13 23 30.43	1.8679	5 15 12.3	13.466
13	13 25 22.60	1.8712	5 28 40.1	13.458
14	13 27 14.97	1.8745	5 42 7.3	13.449
15	13 29 7.54	1.8779	5 55 34.0	13.440
16	13 31 0.32	1.8814	6 9 0.1	13.429
17	13 32 53.30	1.8849	6 22 25.5	13.418
18	13 34 46.49	1.8884	6 35 50.2	13.406
19	13 36 39.90	1.8921	6 49 14.1	13.392
20	13 38 33.54	1.8959	7 2 37.2	13.378
21	13 40 27.41	1.8998	7 15 59.5	13.363
22	13 42 21.51	1.9037	7 29 20.8	13.347
23	13 44 15.85	1.9078	7 42 41.1	13.331
24	13 46 10.44	1.9119	S. 7 56 0.5	13.313

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 21.					THURSDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 46 10.44	1.9119	S. 7 56 0.5	13.313	0	15 24 13.79	2.2036	S. 17 54 29.4	11.153
1	13 48 5.28	1.9161	8 9 18.8	13.295	1	15 26 26.23	2.2114	18 5 36.3	11.075
2	13 50 0.37	1.9204	8 22 35.9	13.275	2	15 28 39.14	2.2192	18 16 38.4	10.995
3	13 51 55.71	1.9247	8 35 51.7	13.254	3	15 30 52.52	2.2271	18 27 35.7	10.914
4	13 53 51.32	1.9291	8 49 6.3	13.233	4	15 33 6.38	2.2351	18 38 28.1	10.831
5	13 55 47.20	1.9337	9 2 19.7	13.211	5	15 35 20.72	2.2431	18 49 15.5	10.747
6	13 57 43.36	1.9383	9 15 31.7	13.187	6	15 37 35.55	2.2512	18 59 57.8	10.661
7	13 59 39.80	1.9430	9 28 42.2	13.163	7	15 39 50.86	2.2593	19 10 34.9	10.574
8	14 1 36.52	1.9478	9 41 51.2	13.138	8	15 42 6.66	2.2674	19 21 6.7	10.485
9	14 3 33.53	1.9527	9 54 58.8	13.112	9	15 44 22.95	2.2756	19 31 33.1	10.394
10	14 5 30.83	1.9576	10 8 4.7	13.084	10	15 46 39.73	2.2838	19 41 54.0	10.301
11	14 7 28.43	1.9627	10 21 8.9	13.055	11	15 48 57.01	2.2921	19 52 9.2	10.207
12	14 9 26.34	1.9678	10 34 11.3	13.025	12	15 51 14.78	2.3004	20 2 18.8	10.111
13	14 11 24.56	1.9730	10 47 11.9	12.995	13	15 53 33.05	2.3087	20 12 22.6	10.014
14	14 13 23.09	1.9783	11 0 10.7	12.964	14	15 55 51.83	2.3171	20 22 20.5	9.915
15	14 15 21.94	1.9836	11 13 7.6	12.932	15	15 58 11.11	2.3255	20 32 12.3	9.814
16	14 17 21.11	1.9890	11 26 2.5	12.898	16	16 0 30.89	2.3339	20 41 58.0	9.711
17	14 19 20.61	1.9945	11 38 55.3	12.863	17	16 2 51.18	2.3423	20 51 37.4	9.606
18	14 21 20.44	2.0001	11 51 46.0	12.826	18	16 5 11.97	2.3508	21 1 10.6	9.500
19	14 23 20.61	2.0058	12 4 34.5	12.789	19	16 7 33.27	2.3592	21 10 37.4	9.392
20	14 25 21.13	2.0116	12 17 20.7	12.751	20	16 9 55.08	2.3677	21 19 57.6	9.281
21	14 27 22.00	2.0174	12 30 4.6	12.711	21	16 12 17.40	2.3762	21 29 11.0	9.168
22	14 29 23.22	2.0233	12 42 46.1	12.670	22	16 14 40.23	2.3847	21 38 17.7	9.055
23	14 31 24.80	2.0293	S. 12 55 25.0	12.628	23	16 17 3.57	2.3932	S. 21 47 17.6	8.940
	WEDNESDAY 22.					FRIDAY 24.			
0	14 33 26.73	2.0353	S. 13 8 1.4	12.585	0	16 19 27.42	2.4017	S. 21 56 10.5	8.823
1	14 35 29.03	2.0415	13 20 35.2	12.541	1	16 21 51.78	2.4102	22 4 56.3	8.704
2	14 37 31.71	2.0478	13 33 6.3	12.496	2	16 24 16.65	2.4187	22 13 34.9	8.583
3	14 39 34.77	2.0541	13 45 34.7	12.449	3	16 26 42.03	2.4272	22 22 6.3	8.460
4	14 41 38.21	2.0605	13 58 0.2	12.401	4	16 29 7.92	2.4357	22 30 30.2	8.335
5	14 43 42.03	2.0670	14 10 22.8	12.352	5	16 31 34.32	2.4441	22 38 46.5	8.209
6	14 45 46.24	2.0735	14 22 42.4	12.301	6	16 34 1.22	2.4525	22 46 55.3	8.082
7	14 47 50.85	2.0802	14 34 58.9	12.249	7	16 36 28.63	2.4610	22 54 56.4	7.952
8	14 49 55.86	2.0869	14 47 12.3	12.196	8	16 38 56.54	2.4694	23 2 49.6	7.820
9	14 52 1.27	2.0937	14 59 22.4	12.141	9	16 41 24.95	2.4778	23 10 34.7	7.686
10	14 54 7.09	2.1005	15 11 29.2	12.085	10	16 43 53.87	2.4861	23 18 11.8	7.550
11	14 56 13.32	2.1074	15 23 32.6	12.027	11	16 46 23.28	2.4944	23 25 40.7	7.413
12	14 58 19.96	2.1144	15 35 32.5	11.968	12	16 48 53.19	2.5026	23 33 1.4	7.275
13	15 0 27.03	2.1215	15 47 28.8	11.908	13	16 51 23.59	2.5108	23 40 13.7	7.135
14	15 2 34.53	2.1286	15 59 21.5	11.848	14	16 53 54.48	2.5189	23 47 17.4	6.992
15	15 4 42.45	2.1358	16 11 10.6	11.786	15	16 56 25.86	2.5270	23 54 12.6	6.848
16	15 6 50.81	2.1430	16 22 55.9	11.722	16	16 58 57.73	2.5351	24 0 59.1	6.701
17	15 8 59.61	2.1503	16 34 37.2	11.656	17	17 1 30.08	2.5431	24 7 36.7	6.552
18	15 11 8.85	2.1577	16 46 14.4	11.588	18	17 4 2.90	2.5510	24 14 5.3	6.402
19	15 13 18.54	2.1652	16 57 47.6	11.519	19	17 6 36.20	2.5588	24 20 24.9	6.251
20	15 15 28.68	2.1727	17 9 16.7	11.449	20	17 9 9.97	2.5666	24 26 35.4	6.098
21	15 17 39.26	2.1803	17 20 41.5	11.377	21	17 11 44.19	2.5742	24 32 36.6	5.943
22	15 19 50.30	2.1879	17 32 1.9	11.303	22	17 14 18.87	2.5818	24 38 28.5	5.786
23	15 22 1.81	2.1957	17 43 17.9	11.229	23	17 16 54.01	2.5894	24 44 10.9	5.628
24	15 24 13.79	2.2036	S. 17 54 29.4	11.153	24	17 19 29.60	2.5969	S. 24 49 43.8	5.468

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 25.					MONDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 19 29.60	2.5969	S.24 49 43.8	5.468	0	19 30 5.38	2.7777	S.25 42 12.8	3.608
1	17 22 5.63	2.6042	24 55 7.0	5.306	1	19 32 52.02	2.7769	25 38 30.3	3.808
2	17 24 42.10	2.6114	25 0 20.4	5.142	2	19 35 38.61	2.7759	25 34 35.8	4.008
3	17 27 19.01	2.6185	25 5 24.0	4.977	3	19 38 25.13	2.7746	25 30 29.3	4.208
4	17 29 56.34	2.6255	25 10 17.6	4.810	4	19 41 11.57	2.7732	25 26 10.8	4.407
5	17 32 34.09	2.6324	25 15 1.2	4.641	5	19 43 57.92	2.7716	25 21 40.4	4.605
6	17 35 12.24	2.6392	25 19 34.6	4.471	6	19 46 44.17	2.7698	25 16 58.2	4.803
7	17 37 50.80	2.6459	25 23 57.7	4.299	7	19 49 30.30	2.7677	25 12 4.1	5.000
8	17 40 29.76	2.6525	25 28 10.5	4.127	8	19 52 16.30	2.7655	25 6 58.2	5.196
9	17 43 9.11	2.6590	25 32 13.0	3.953	9	19 55 2.17	2.7632	25 1 40.6	5.391
10	17 45 48.84	2.6653	25 36 5.0	3.777	10	19 57 47.89	2.7607	24 56 11.3	5.586
11	17 48 28.95	2.6714	25 39 46.2	3.599	11	20 0 33.45	2.7580	24 50 30.3	5.780
12	17 51 9.42	2.6774	25 43 16.7	3.419	12	20 3 18.85	2.7551	24 44 37.6	5.973
13	17 53 50.24	2.6833	25 46 36.4	3.239	13	20 6 4.07	2.7519	24 38 33.4	6.165
14	17 56 31.42	2.6891	25 49 45.3	3.058	14	20 8 49.09	2.7486	24 32 17.8	6.355
15	17 59 12.95	2.6947	25 52 43.4	2.876	15	20 11 33.90	2.7452	24 25 50.8	6.545
16	18 1 54.81	2.7002	25 55 30.5	2.692	16	20 14 18.51	2.7417	24 19 12.4	6.734
17	18 4 36.98	2.7054	25 58 6.5	2.506	17	20 17 2.90	2.7380	24 12 22.7	6.922
18	18 7 19.46	2.7105	26 0 31.3	2.320	18	20 19 47.07	2.7341	24 5 21.8	7.108
19	18 10 2.24	2.7155	26 2 44.9	2.133	19	20 22 31.00	2.7300	23 58 9.8	7.293
20	18 12 45.32	2.7203	26 4 47.2	1.944	20	20 25 14.68	2.7258	23 50 46.7	7.476
21	18 15 28.69	2.7249	26 6 38.1	1.753	21	20 27 58.10	2.7214	23 43 12.6	7.653
22	18 18 12.33	2.7293	26 8 17.6	1.562	22	20 30 41.25	2.7170	23 35 27.7	7.833
23	18 20 56.22	2.7336	S.26 9 45.6	1.370	23	20 33 24.13	2.7124	S.23 27 32.0	8.018
	SUNDAY 26.					TUESDAY 28.			
0	18 23 40.36	2.7377	S.26 11 2.0	1.177	0	20 36 6.74	2.7076	S.23 19 25.5	8.196
1	18 26 24.74	2.7416	26 12 6.8	0.983	1	20 38 49.06	2.7027	23 11 8.4	8.373
2	18 29 9.36	2.7453	26 13 0.0	0.789	2	20 41 31.07	2.6976	23 2 40.8	8.548
3	18 31 54.21	2.7489	26 13 41.5	0.594	3	20 44 12.77	2.6924	22 54 2.7	8.721
4	18 34 39.26	2.7522	26 14 11.3	0.398	4	20 46 54.16	2.6872	22 45 14.3	8.892
5	18 37 24.49	2.7553	26 14 29.3	0.201	5	20 49 35.24	2.6819	22 36 15.7	9.062
6	18 40 9.90	2.7583	26 14 35.4	−0.003	6	20 52 16.00	2.6765	22 27 6.9	9.230
7	18 42 55.49	2.7611	26 14 29.6	+0.195	7	20 54 56.42	2.6709	22 17 48.1	9.396
8	18 45 41.24	2.7637	26 14 11.9	0.393	8	20 57 36.50	2.6651	22 8 19.4	9.561
9	18 48 27.15	2.7661	26 13 42.4	0.592	9	21 0 16.23	2.6592	21 58 40.8	9.721
10	18 51 13.20	2.7683	26 13 0.9	0.793	10	21 2 55.61	2.6533	21 48 52.5	9.885
11	18 53 59.36	2.7703	26 12 7.3	0.994	11	21 5 34.63	2.6473	21 38 54.6	10.044
12	18 56 45.63	2.7721	26 11 1.7	1.194	12	21 8 13.29	2.6412	21 28 47.2	10.201
13	18 59 32.00	2.7737	26 9 44.0	1.395	13	21 10 51.58	2.6350	21 18 30.5	10.356
14	19 2 18.47	2.7751	26 8 14.3	1.596	14	21 13 29.50	2.6288	21 8 4.5	10.509
15	19 5 5.03	2.7763	26 6 32.5	1.797	15	21 16 7.04	2.6225	20 57 29.3	10.661
16	19 7 51.65	2.7773	26 4 38.7	1.999	16	21 18 44.20	2.6161	20 46 45.1	10.810
17	19 10 38.31	2.7780	26 2 32.8	2.201	17	21 21 20.98	2.6097	20 35 52.1	10.957
18	19 13 25.00	2.7785	26 0 14.7	2.403	18	21 23 57.37	2.6032	20 24 50.2	11.103
19	19 16 11.72	2.7789	25 57 44.6	2.604	19	21 26 33.37	2.5966	20 13 39.6	11.246
20	19 18 58.47	2.7791	25 55 2.4	2.805	20	21 29 8.97	2.5900	20 2 20.6	11.387
21	19 21 45.23	2.7791	25 52 8.1	3.006	21	21 31 44.17	2.5833	19 50 53.2	11.523
22	19 24 31.98	2.7788	25 49 1.7	3.207	22	21 34 18.97	2.5766	19 39 17.5	11.663
23	19 27 18.70	2.7783	25 45 43.3	3.408	23	21 36 53.37	2.5699	19 27 33.6	11.798
24	19 30 5.38	2.7777	S.25 42 12.8	3.608	24	21 39 27.36	2.5631	S.19 15 41.7	11.930

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 39 27.36	2.5631	S. 19 15 41.7	11.930
1	21 42 0.94	2.5562	19 3 41.9	12.061
2	21 44 34.11	2.5494	18 51 34.4	12.189
3	21 47 6.87	2.5426	18 39 19.2	12.315
4	21 49 39.22	2.5357	18 26 56.5	12.439
5	21 52 11.15	2.5287	18 14 26.5	12.561
6	21 54 42.66	2.5217	18 1 49.2	12.680
7	21 57 13.76	2.5148	17 49 4.8	12.798
8	21 59 44.44	2.5078	17 36 13.4	12.913
9	22 2 14.70	2.5008	17 23 15.2	13.026
10	22 4 44.54	2.4938	17 10 10.3	13.137
11	22 7 13.96	2.4869	16 56 58.8	13.246
12	22 9 42.97	2.4800	16 43 40.8	13.352
13	22 12 11.56	2.4730	16 30 16.5	13.456
14	22 14 39.73	2.4660	16 16 46.1	13.557
15	22 17 7.48	2.4591	16 3 9.7	13.656
16	22 19 34.82	2.4522	15 49 27.4	13.753
17	22 22 1.75	2.4453	15 35 39.2	13.849
18	22 24 28.26	2.4384	15 21 45.4	13.942
19	22 26 54.36	2.4316	15 7 46.2	14.032
20	22 29 20.05	2.4248	14 53 41.6	14.120
21	22 31 45.33	2.4180	14 39 31.7	14.207
22	22 34 10.20	2.4112	14 25 16.7	14.291
23	22 36 34.67	2.4045	S. 14 10 56.8	14.373

THURSDAY 30.

0	22 38 58.74	2.3978	S. 13 56 32.0	14.452
1	22 41 22.41	2.3911	13 42 2.5	14.529
2	22 43 45.68	2.3845	13 27 28.5	14.604
3	22 46 8.55	2.3780	13 12 50.0	14.676
4	22 48 31.03	2.3715	12 58 7.2	14.747
5	22 50 53.12	2.3650	12 43 20.3	14.816
6	22 53 14.82	2.3585	12 28 29.3	14.882
7	22 55 36.14	2.3522	12 13 34.4	14.946
8	22 57 57.08	2.3459	11 58 35.7	15.009
9	23 0 17.64	2.3396	11 43 33.3	15.069
10	23 2 37.83	2.3334	11 28 27.4	15.127
11	23 4 57.65	2.3272	11 13 18.1	15.183
12	23 7 17.09	2.3210	10 58 5.4	15.236
13	23 9 36.17	2.3150	10 42 49.6	15.287
14	23 11 54.89	2.3091	10 27 30.8	15.337
15	23 14 13.26	2.3033	10 12 9.1	15.385
16	23 16 31.28	2.2974	9 56 44.6	15.430
17	23 18 48.95	2.2916	9 41 17.4	15.473
18	23 21 6.27	2.2859	9 25 47.7	15.514
19	23 23 23.25	2.2803	9 10 15.5	15.555
20	23 25 39.90	2.2748	8 54 41.1	15.593
21	23 27 56.21	2.2693	8 39 4.4	15.629
22	23 30 12.20	2.2638	8 23 25.6	15.662
23	23 32 27.87	2.2584	8 7 44.9	15.693
24	23 34 43.21	2.2531	S. 7 52 2.4	15.722

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 34 43.21	2.2531	S. 7 52 2.4	15.722
1	23 36 58.24	2.2480	7 36 18.1	15.750
2	23 39 12.96	2.2429	7 20 32.3	15.777
3	23 41 27.38	2.2378	7 4 44.9	15.802
4	23 43 41.50	2.2328	6 48 56.1	15.824
5	23 45 55.32	2.2279	6 33 6.1	15.844
6	23 48 8.84	2.2230	6 17 14.9	15.862
7	23 50 22.08	2.2183	6 1 22.6	15.879
8	23 52 35.04	2.2136	5 45 29.4	15.894
9	23 54 47.72	2.2091	5 29 35.4	15.907
10	23 57 0.13	2.2046	5 13 40.6	15.918
11	23 59 12.27	2.2002	4 57 45.2	15.928
12	0 1 24.15	2.1959	4 41 49.3	15.936
13	0 3 35.77	2.1917	4 25 52.9	15.943
14	0 5 47.14	2.1875	4 9 56.2	15.947
15	0 7 58.26	2.1834	3 53 59.3	15.949
16	0 10 9.14	2.1794	3 38 2.3	15.951
17	0 12 19.78	2.1755	3 22 5.2	15.951
18	0 14 30.19	2.1716	3 6 8.2	15.948
19	0 16 40.37	2.1679	2 50 11.4	15.944
20	0 18 50.33	2.1642	2 34 14.9	15.939
21	0 21 0.07	2.1606	2 18 18.7	15.933
22	0 23 9.60	2.1571	2 2 23.0	15.925
23	0 25 18.92	2.1536	S. 1 46 27.8	15.915

SATURDAY, FEBRUARY 1.

0	0 27 28.03	2.1503	S. 1 30 33.2	15.903

PHASES OF THE MOON.

		d	h	m
☽	First Quarter, . . .	5	9	27.5
○	Full Moon, ...	13	4	23.0
☾	Last Quarter, . . .	21	8	30.8
●	New Moon, . . .	28	5	27.2

		d	h
☾	Apogee, ...	15	13.8
☾	Perigee, ...	28	13.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun W.	31° 31′ 54″	2377	33° 16′ 2″	2382	35° 0′ 2″	2388	36° 43′ 54″	2394
	α Arietis E.	84 26 1	2151	82 36 19	2159	80 46 49	2166	78 57 30	2174
	Aldebaran E.	114 52 6	2077	113 0 32	2083	111 9 6	2083	109 17 49	2095
2	Sun W.	45 20 40	2437	47 3 22	2447	48 45 50	2458	50 28 2	2470
	α Arietis E.	69 54 29	2229	68 6 44	2243	66 19 19	2256	64 32 15	2271
	Aldebaran E.	100 4 15	2137	98 14 13	2147	96 24 26	2158	94 34 55	2169
3	Sun W.	58 54 48	2533	60 35 15	2547	62 15 23	2561	63 55 11	2576
	Venus W.	17 53 57	2652	19 31 41	2657	21 9 19	2663	22 46 48	2671
	α Arietis E.	55 42 47	2358	53 58 12	2378	52 14 6	2399	50 30 30	2422
	Aldebaran E.	85 31 40	2230	83 43 57	2243	81 56 34	2257	80 9 31	2270
4	Sun W.	72 9 9	2651	73 46 55	2666	75 24 20	2681	77 1 25	2697
	Venus W.	30 51 5	2727	32 27 9	2740	34 25 6	2754	35 38 24	2769
	Fomalhaut W.	28 43 13	3131	30 10 45	3064	31 39 39	3008	33 9 42	2963
	α Arietis E.	42 1 3	2554	40 21 5	2585	38 41 51	2621	37 3 24	2658
	Aldebaran E.	71 19 25	2343	69 34 28	2357	67 49 52	2373	66 5 38	2388
	Pollux E.	115 25 55	2322	113 40 28	2337	111 55 22	2351	110 10 37	2365
5	Sun W.	85 1 37	2775	86 36 38	2791	88 11 18	2806	89 45 38	2821
	Venus W.	43 31 2	2841	45 4 37	2856	46 37 52	2871	48 10 48	2885
	Fomalhaut W.	40 50 59	2839	42 24 36	2828	43 58 28	2819	45 32 30	2814
	α Pegasi W.	29 47 3	4810	30 46 31	4588	31 49 6	4399	32 54 28	4239
	α Arietis E.	29 5 38	2916	27 33 40	2989	26 3 14	3074	24 34 33	3174
	Aldebaran E.	57 29 57	2465	55 47 54	2481	54 6 14	2497	52 24 56	2512
	Pollux E.	101 31 58	2437	99 49 16	2451	98 6 54	2465	96 24 52	2480
6	Sun W.	97 32 22	2897	99 4 45	2911	100 36 50	2926	102 8 36	2940
	Venus W.	55 50 49	2958	57 21 54	2973	58 52 41	2987	60 23 10	3001
	Fomalhaut W.	53 23 55	2808	54 58 12	2811	56 32 25	2815	58 6 34	2819
	α Pegasi W.	38 53 2	3718	40 9 30	3652	41 27 8	3595	42 45 48	3545
	Aldebaran E.	44 3 59	2593	42 24 55	2610	40 46 14	2627	39 7 56	2645
	Pollux E.	87 59 37	2548	86 19 31	2562	84 39 44	2575	83 0 15	2588
	Regulus E.	124 9 53	2564	122 30 8	2577	120 50 41	2589	119 11 31	2602
	Jupiter E.	126 56 21	2539	125 16 2	2552	123 36 1	2564	121 56 17	2576
7	Sun W.	109 43 0	3009	111 13 1	3022	112 42 46	3035	114 12 15	3048
	Venus W.	67 51 18	3069	69 20 6	3082	70 48 38	3094	72 16 55	3107
	Fomalhaut W.	65 55 37	2849	67 29 1	2857	69 2 15	2864	70 35 20	2872
	α Pegasi W.	49 30 42	3376	50 53 23	3357	52 16 29	3339	53 39 55	3323
	Aldebaran E.	31 2 28	2739	29 26 40	2761	27 51 20	2785	26 16 32	2811
	Pollux E.	74 47 12	2651	73 9 26	2663	71 31 57	2675	69 54 44	2687
	Regulus E.	110 59 55	2662	109 22 24	2674	107 45 9	2685	106 8 9	2697
	Jupiter E.	113 41 45	2637	112 3 40	2648	110 25 50	2658	108 48 14	2669
8	Sun W.	121 35 46	3110	123 3 44	3122	124 31 27	3133	125 58 56	3144
	Venus W.	79 34 35	3167	81 1 24	3178	82 28 0	3168	83 54 23	3199
	Fomalhaut W.	78 18 11	2913	79 50 13	2921	81 22 5	2930	82 53 46	2939
	α Pegasi W.	60 40 55	3273	62 5 38	3268	63 30 27	3264	64 55 21	3260
	α Arietis W.	17 52 18	4032	19 3 26	3847	20 17 40	3702	21 34 25	3587
	Pollux E.	61 52 26	2742	60 16 42	2753	58 41 12	2763	57 5 56	2773
	Regulus E.	98 6 52	2750	96 31 19	2760	94 55 59	2771	93 20 53	2780
	Jupiter E.	100 43 56	2722	99 7 46	2733	97 31 50	2743	95 56 7	2752

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	38° 27′ 38″	2401	40° 11′ 12″	2400	41° 54′ 34″	2417	43° 37′ 44″	2427
	α Arietis	E.	77 8 23	2183	75 19 30	2194	73 30 53	2204	71 42 32	2216
	Aldebaran	E.	107 26 42	2102	105 35 46	2111	103 45 3	2118	101 54 32	2128
2	Sun	W.	52 9 58	2462	53 51 37	2494	55 32 59	2507	57 14 3	2520
	α Arietis	E.	62 45 33	2257	60 59 14	2303	59 13 19	2321	57 27 50	2339
	Aldebaran	E.	92 45 40	2180	90 56 43	2192	89 8 3	2204	87 19 42	2217
3	Sun	W.	65 34 39	2591	67 13 47	2605	68 52 35	2620	70 31 2	2635
	Venus	W.	24 24 7	2681	26 1 13	2690	27 38 6	2701	29 14 44	2714
	α Arietis	E.	48 47 26	2445	47 4 55	2470	45 23 0	2497	43 41 42	2525
	Aldebaran	E.	78 22 48	2285	76 36 26	2298	74 50 24	2313	73 4 44	2328
4	Sun	W.	78 38 9	2713	80 14 32	2729	81 50 34	2744	83 26 16	2760
	Venus	W.	37 13 33	2783	38 48 23	2797	40 22 55	2811	41 57 8	2826
	Fomalhaut	W.	34 40 41	2927	36 12 26	2897	37 44 49	2873	39 17 42	2855
	α Arietis	E.	35 25 48	2700	33 49 8	2747	32 13 30	2797	30 38 58	2852
	Aldebaran	E.	64 21 46	2403	62 38 16	2419	60 55 8	2434	59 12 22	2449
	Pollux	E.	108 26 12	2380	106 42 8	2394	104 58 24	2408	103 15 1	2422
5	Sun	W.	91 19 38	2837	92 53 18	2852	94 26 39	2867	95 59 40	2882
	Venus	W.	49 43 26	2900	51 15 45	2915	52 47 45	2930	54 19 26	2944
	Fomalhaut	W.	47 6 40	2809	48 40 56	2807	50 15 15	2806	51 49 35	2806
	α Pegasi	W.	34 2 17	4101	35 12 18	3983	36 24 14	3891	37 37 53	3793
	α Arietis	E.	23 7 53	3293	21 43 33	3438	20 21 58	3612	19 3 37	3831
	Aldebaran	E.	50 44 0	2528	49 3 26	2545	47 23 15	2561	45 43 26	2577
	Pollux	E.	94 43 10	2494	93 1 48	2507	91 20 45	2522	89 40 2	2535
6	Sun	W.	103 40 4	2954	105 11 14	2968	106 42 7	2982	108 12 42	2996
	Venus	W.	61 53 21	3015	63 23 15	3028	64 52 53	3042	66 22 14	3056
	Fomalhaut	W.	59 40 37	2824	61 14 34	2830	62 48 23	2836	64 22 4	2842
	α Pegasi	W.	44 5 22	3502	45 25 44	3464	46 46 48	3431	48 8 29	3403
	Aldebaran	E.	37 30 2	2662	35 52 31	2680	34 15 24	2699	32 38 43	2719
	Pollux	E.	81 21 3	2601	79 42 9	2614	78 3 33	2626	76 25 14	2639
	Regulus	E.	117 32 39	2614	115 54 3	2626	114 15 44	2638	112 37 41	2651
	Jupiter	E.	120 16 49	2588	118 37 38	2601	116 58 44	2612	115 20 6	2625
7	Sun	W.	115 41 28	3061	117 10 25	3073	118 39 7	3086	120 7 34	3098
	Venus	W.	73 44 56	3119	75 12 42	3131	76 40 14	3143	78 7 32	3155
	Fomalhaut	W.	72 8 15	2880	73 41 0	2888	75 13 34	2896	76 45 58	2905
	α Pegasi	W.	55 3 40	3309	56 27 41	3298	57 51 55	3288	59 16 20	3280
	Aldebaran	E.	24 42 19	2839	23 8 42	2870	21 35 45	2907	20 3 35	2948
	Pollux	E.	68 17 46	2698	66 41 3	2710	65 4 36	2721	63 28 24	2732
	Regulus	E.	104 31 25	2707	102 54 55	2719	101 18 40	2729	99 42 39	2740
	Jupiter	E.	107 10 53	2681	105 33 47	2692	103 56 56	2702	102 20 19	2713
8	Sun	W.	127 26 12	3156	128 53 14	3168	130 20 2	3178	131 46 37	3189
	Venus	W.	85 20 33	3210	86 46 30	3220	88 12 15	3231	89 37 48	3241
	Fomalhaut	W.	84 25 15	2948	85 56 33	2957	87 27 40	2965	88 58 36	2975
	α Pegasi	W.	66 20 19	3259	67 45 19	3257	69 10 21	3256	70 35 24	3257
	α Arietis	W.	22 53 14	3495	24 13 44	3421	25 35 37	3361	26 58 38	3312
	Pollux	E.	55 30 53	2784	53 56 4	2793	52 21 27	2803	50 47 3	2812
	Regulus	E.	91 45 59	2790	90 11 18	2799	88 36 49	2809	87 2 33	2818
	Jupiter	E.	94 20 36	2762	92 45 18	2772	91 10 13	2780	89 35 19	2789

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Venus	W.	91 3 9	3251	92 28 18	3260	93 53 16	3270	95 18 3	3279
	Fomalhaut	W.	90 29 20	2984	91 59 53	2993	93 30 15	3002	95 0 25	3011
	α Pegasi	W.	72 0 26	3258	73 25 27	3259	74 50 27	3261	76 15 24	3265
	α Arietis	W.	28 22 36	3271	29 47 21	3239	31 12 44	3211	32 38 40	3188
	Pollux	E.	49 12 51	2821	47 38 51	2831	46 5 4	2841	44 31 29	2849
	Regulus	E.	85 28 29	2828	83 54 37	2836	82 20 56	2845	80 47 26	2853
	Jupiter	E.	88 0 37	2798	86 26 6	2807	84 51 47	2815	83 17 39	2824
10	Fomalhaut	W.	102 28 22	3059	103 57 22	3069	105 26 10	3079	106 54 45	3089
	Venus	W.	102 19 18	3323	103 43 3	3332	105 6 38	3339	106 30 4	3347
	α Pegasi	W.	83 19 10	3284	84 43 40	3289	86 8 4	3294	87 32 22	3301
	α Arietis	W.	39 53 48	3121	41 21 32	3114	42 49 24	3108	44 17 24	3104
	Pollux	E.	36 46 22	2893	35 13 54	2901	33 41 37	2910	32 9 31	2919
	Regulus	E.	73 2 38	2894	71 30 11	2901	69 57 54	2909	68 25 47	2916
	Jupiter	E.	75 29 36	2862	73 56 29	2870	72 23 32	2877	70 50 44	2884
11	α Arietis	W.	51 38 22	3094	53 6 39	3094	54 34 56	3095	56 3 12	3095
	Regulus	E.	60 47 28	2952	59 16 15	2958	57 45 10	2965	56 14 14	2973
	Jupiter	E.	63 8 58	2918	61 37 2	2925	60 5 15	2931	58 33 36	2938
	Spica	E.	114 50 14	2956	113 19 6	2962	111 48 5	2967	110 17 11	2973
	Mars	E.	117 33 38	3106	116 5 36	3112	114 37 41	3119	113 9 54	3124
12	α Arietis	W.	63 24 14	3103	64 52 20	3105	66 20 23	3108	67 48 23	3110
	Aldebaran	W.	32 30 18	3058	33 59 19	3058	35 28 20	3058	36 57 21	3058
	Regulus	E.	48 41 41	3005	47 11 35	3012	45 41 37	3018	44 11 47	3025
	Jupiter	E.	50 57 18	2968	49 26 25	2974	47 55 40	2980	46 25 2	2985
	Spica	E.	102 44 24	2999	101 14 10	3005	99 44 3	3009	98 14 2	3014
	Mars	E.	105 52 44	3153	104 25 38	3158	102 58 39	3163	101 31 46	3168
13	α Arietis	W.	75 7 38	3124	76 35 19	3127	78 2 56	3130	79 30 29	3133
	Aldebaran	W.	44 22 10	3065	45 51 2	3068	47 19 51	3069	48 48 38	3072
	Regulus	E.	36 44 42	3060	35 15 43	3067	33 46 53	3074	32 18 12	3083
	Spica	E.	90 45 25	3037	89 15 58	3042	87 46 37	3046	86 17 21	3050
	Mars	E.	94 18 49	3192	92 52 30	3197	91 26 17	3200	90 0 8	3204
14	α Arietis	W.	86 47 21	3148	88 14 32	3151	89 41 40	3154	91 8 44	3157
	Aldebaran	W.	56 11 52	3082	57 40 23	3085	59 8 51	3087	60 37 17	3089
	Spica	E.	78 52 13	3069	77 23 25	3072	75 54 41	3075	74 26 1	3079
	Mars	E.	82 50 33	3223	81 24 51	3225	79 59 12	3229	78 33 37	3231
15	Aldebaran	W.	67 58 51	3097	69 27 4	3098	70 55 16	3100	72 23 26	3101
	Pollux	W.	23 46 44	3101	25 14 53	3099	26 43 4	3098	28 11 16	3096
	Spica	E.	67 3 37	3092	65 35 18	3094	64 7 1	3096	62 38 47	3098
	Mars	E.	71 26 27	3243	70 1 9	3245	68 35 53	3246	67 10 38	3247
	Antares	E.	112 56 24	3082	111 27 53	3083	109 59 23	3085	108 30 55	3087
16	Aldebaran	W.	79 44 4	3102	81 12 11	3102	82 40 18	3101	84 8 26	3101
	Pollux	W.	35 32 34	3092	37 0 53	3091	38 29 13	3091	39 57 34	3089
	Spica	E.	55 18 9	3105	53 50 6	3107	52 22 5	3108	50 54 5	3108
	Mars	E.	60 4 40	3250	58 39 30	3250	57 14 20	3249	55 49 9	3248
	Antares	E.	101 8 52	3089	99 40 29	3088	98 12 5	3088	96 43 41	3088
17	Pollux	W.	47 19 50	3079	48 48 25	3076	50 17 4	3073	51 45 46	3069
	Spica	E.	43 34 12	3110	42 6 14	3110	40 38 17	3110	39 10 19	3110
	Antares	E.	89 21 24	3081	87 52 51	3078	86 24 14	3075	84 55 34	3072

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Venus	W.	96° 42′ 39″	3288	98° 7′ 5″	3297	99° 31′ 20″	3306	100° 55′ 24″	3315
	Fomalhaut	W.	96 30 24	3021	98 0 11	3030	99 29 47	3040	100 59 10	3049
	α Pegasi	W.	77 40 17	3267	79 5 7	3270	80 29 53	3275	81 54 34	3279
	α Arietis	W.	34 5 4	3169	35 31 50	3153	36 58 55	3141	38 26 15	3130
	Pollux	E.	42 58 5	2858	41 24 52	2867	39 51 51	2876	38 19 1	2884
	Regulus	E.	79 14 7	2862	77 40 59	2870	76 8 2	2878	74 35 15	2886
	Jupiter	E.	81 43 42	2831	80 9 55	2840	78 36 19	2848	77 2 53	2855
10	Fomalhaut	W.	108 23 8	3100	109 51 18	3110	111 19 15	3121	112 46 59	3132
	Venus	W.	107 53 21	3355	109 16 29	3363	110 39 28	3370	112 2 19	3378
	α Pegasi	W.	88 56 32	3307	90 20 35	3315	91 44 29	3322	93 8 15	3329
	α Arietis	W.	45 45 29	3101	47 13 38	3098	48 41 51	3096	50 10 6	3095
	Pollux	E.	30 87 36	2927	29 5 52	2936	27 34 19	2946	26 2 58	2956
	Regulus	E.	66 53 49	2924	65 22 1	2931	63 50 21	2938	62 18 50	2945
	Jupiter	E.	69 18 5	2891	67 45 35	2898	66 13 14	2905	64 41 2	2912
11	α Arietis	W.	57 31 28	3096	58 59 42	3097	60 27 55	3099	61 56 6	3101
	Regulus	E.	54 43 27	2979	53 12 48	2986	51 42 18	2992	50 11 55	2999
	Jupiter	E.	57 2 5	2944	55 30 42	2950	53 59 26	2956	52 28 18	2962
	Spica	E.	108 46 24	2978	107 15 44	2984	105 45 11	2989	104 14 44	2994
	Mars	E.	111 42 14	3130	110 14 41	3136	108 47 15	3142	107 19 56	3148
12	α Arietis	W.	69 16 21	3113	70 44 15	3115	72 12 6	3118	73 39 54	3121
	Aldebaran	W.	38 26 22	3060	39 55 21	3060	41 24 19	3061	42 53 16	3064
	Regulus	E.	42 42 5	3032	41 12 32	3039	39 43 7	3045	38 13 50	3052
	Jupiter	E.	44 54 31	2992	43 24 8	2997	41 53 52	3003	40 23 43	3009
	Spica	E.	96 44 7	3019	95 14 18	3024	93 44 35	3028	92 14 57	3033
	Mars	E.	100 4 59	3173	98 38 18	3178	97 11 43	3183	95 45 13	3188
13	α Arietis	W.	80 57 59	3136	82 25 25	3139	83 52 47	3142	85 20 6	3145
	Aldebaran	W.	50 17 22	3074	51 46 3	3076	53 14 42	3078	54 43 18	3080
	Regulus	E.	30 49 42	3091	29 21 22	3101	27 53 13	3110	26 25 16	3122
	Spica	E.	84 48 10	3054	83 19 4	3057	81 50 2	3061	80 21 5	3065
	Mars	E.	88 34 4	3209	87 8 5	3212	85 42 10	3215	84 16 19	3220
14	α Arietis	W.	92 35 45	3160	94 2 42	3163	95 29 36	3166	96 56 26	3168
	Aldebaran	W.	62 5 40	3091	63 34 1	3092	65 2 20	3095	66 30 96	3096
	Spica	E.	72 57 26	3082	71 28 54	3084	70 0 25	3087	68 31 59	3090
	Mars	E.	77 8 5	3234	75 42 36	3236	74 17 10	3239	72 51 47	3242
15	Aldebaran	W.	73 51 35	3101	75 19 43	3102	76 47 50	3102	78 15 57	3102
	Pollux	W.	29 39 30	3096	31 7 44	3095	32 36 0	3095	34 4 16	3093
	Spica	E.	61 10 35	3100	59 42 25	3102	58 14 18	3104	56 46 13	3105
	Mars	E.	65 45 24	3248	64 20 12	3249	62 55 1	3249	61 29 50	3250
	Antares	E.	107 2 29	3087	105 34 4	3087	104 5 39	3088	102 37 15	3089
16	Aldebaran	W.	85 36 34	3100	87 4 44	3099	88 32 55	3098	90 1 7	3096
	Pollux	W.	41 25 57	3087	42 54 22	3086	44 22 49	3084	45 51 18	3082
	Spica	E.	49 26 5	3109	47 58 6	3110	46 30 8	3110	45 2 10	3110
	Mars	E.	54 23 57	3247	52 58 44	3247	51 33 30	3245	50 8 14	3242
	Antares	E.	95 15 17	3087	93 46 51	3086	92 18 24	3084	90 49 55	3082
17	Pollux	W.	53 14 33	3066	54 43 24	3062	56 12 20	3058	57 41 21	3053
	Spica	E.	37 42 21	3110	36 14 23	3110	34 46 25	3110	33 18 27	3110
	Antares	E.	83 26 50	3069	81 58 2	3065	80 29 10	3061	79 0 13	3057

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Pollux	W.	59° 10′ 28″	3048	60° 39′ 41″	3043	62° 9′ 0″	3037	63° 38′ 27″	3031
	Regulus	W.	23 15 5	3128	24 42 41	3114	26 10 34	3101	27 38 43	3087
	Antares	E.	77 31 11	3052	76 2 3	3047	74 32 49	3043	73 3 29	3036
	Sun	E.	127 26 35	3447	126 5 12	3441	124 43 42	3435	123 22 5	3423
19	Pollux	W.	71 7 42	2995	72 38 1	2387	74 8 30	2978	75 39 10	2969
	Regulus	W.	35 3 7	3031	36 32 41	3021	38 2 28	3009	39 32 29	2997
	Jupiter	W.	33 19 27	2987	34 49 56	2977	36 20 38	2965	37 51 34	2955
	Antares	E.	65 34 51	3002	64 4 41	2995	62 34 22	2986	61 3 52	2977
	Sun	E.	116 31 54	3388	115 9 24	3379	113 46 43	3369	112 23 51	3359
20	Pollux	W.	83 15 31	2917	84 47 28	2906	86 19 39	2394	87 52 5	2882
	Regulus	W.	47 6 13	2939	48 37 43	2925	50 9·30	2912	51 41 33	2899
	Jupiter	W.	45 29 45	2897	47 2 8	2884	48 34 47	2871	50 7 43	2859
	Antares	E.	53 28 29	2929	51 56 47	2918	50 24 51	2907	48 52 41	2895
	Sun	E.	105 26 29	3302	104 2 20	3289	102 37 56	3276	101 13 17	3263
21	Pollux	W.	95 38 24	2815	97 12 33	2800	98 47 1	2785	100 21 48	2769
	Regulus	W.	59 26 10	2828	61 0 1	2813	62 34 12	2798	64 8 43	2782
	Jupiter	W.	57 56 43	2788	59 31 27	2772	61 6 31	2757	62 41 55	2742
	Antares	E.	41 8 3	2834	39 34 19	2821	38 0 19	2808	36 26 2	2795
	Sun	E.	94 5 53	3189	92 39 32	3174	91 12 52	3158	89 45 52	3141
22	Regulus	W.	72 6 38	2698	73 43 20	2681	75 20 25	2663	76 57 54	2645
	Jupiter	W.	70 44 14	2658	72 21 50	2641	73 59 49	2624	75 38 11	2607
	Antares	E.	28 30 19	2732	26 54 21	2719	25 18 7	2709	23 41 39	2699
	Sun	E.	82 25 42	3053	80 56 35	3034	79 27 5	3015	77 57 11	2997
23	Regulus	W.	85 11 31	2553	86 51 31	2534	88 31 57	2515	90 12 49	2496
	Jupiter	W.	83 56 14	2514	85 37 8	2495	87 18 28	2476	89 0 15	2457
	Spica	W.	31 18 45	2604	32 57 34	2580	34 36 57	2556	36 16 53	2533
	Mars	W.	22 51 55	2684	24 28 57	2663	26 6 26	2644	27 44 21	2624
	Sun	E.	70 21 42	2898	68 49 21	2879	67 16 35	2859	65 43 23	2838
24	Regulus	W.	98 43 54	2401	100 27 28	2381	102 11 30	2363	103 55 58	2344
	Jupiter	W.	97 35 54	2362	99 20 24	2343	101 5 21	2324	102 50 45	2305
	Spica	W.	44 44 29	2422	46 27 33	2401	48 11 7	2380	49 55 11	2359
	Mars	W.	36 0 51	2523	37 41 32	2503	39 22 41	2483	41 4 18	2464
	Sun	E.	57 50 49	2738	56 14 59	2718	54 38 43	2698	53 2 1	2679
25	Jupiter	W.	111 44 33	2215	113 32 38	2198	115 21 9	2181	117 10 5	2165
	Spica	W.	58 42 45	2262	60 29 41	2243	62 17 4	2225	64 4 54	2208
	Mars	W.	49 39 14	2368	51 23 34	2350	53 8 21	2332	54 53 34	2314
	Sun	E.	44 52 7	2587	43 12 54	2570	41 33 18	2553	39 53 19	2538
26	Mars	W.	63 45 53	2233	65 33 32	2218	67 21 32	2204	69 9 53	2190
30	Sun	W.	25 47 10	2389	27 31 0	2393	29 14 45	2397	30 58 24	2403
	α Arietis	E.	61 26 2	2141	59 36 6	2157	57 46 33	2172	55 57 24	2189
	Aldebaran	E.	91 27 18	2039	89 34 44	2048	87 42 24	2058	85 50 20	2070
31	Sun	W.	39 33 51	2453	41 16 10	2466	42 58 11	2480	44 39 52	2494
	α Arietis	E.	46 58 46	2298	45 12 43	2324	43 27 19	2353	41 42 37	2381
	Aldebaran	E.	76 34 39	2134	74 44 32	2149	72 54 48	2165	71 5 27	2180
	Pollux	E.	120 40 46	2115	118 50 10	2129	116 59 55	2143	115 10 1	2153

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Pollux	W.	65° 8′ 1″	3025	66° 37′ 43″	3018	68° 7′ 34″	3011	69° 37′ 33″	3003
	Regulus	W.	29 7 8	3076	30 35 47	3065	32 4 40	3053	33 33 47	3043
	Antares	E.	71 34 1	3030	70 4 26	3024	68 34 43	3017	67 4 51	3010
	Sun	E.	122 0 20	3421	120 38 27	3413	119 16 25	3405	117 54 14	3397
19	Pollux	W.	77 10 1	2960	78 41 4	2950	80 12 20	2939	81 43 49	2929
	Regulus	W.	41 2 45	2986	42 33 15	2975	44 3 59	2963	45 34 58	2950
	Jupiter	W.	39 22 43	2944	40 54 6	2932	42 25 44	2920	43 57 37	2909
	Antares	E.	59 33 11	2969	58 2 19	2959	56 31 15	2949	54 59 58	2939
	Sun	E.	111 0 48	3349	109 37 33	3338	108 14 5	3326	106 50 24	3314
20	Pollux	W.	89 24 47	2869	90 57 46	2856	92 31 1	2842	94 4 34	2829
	Regulus	W.	53 13 53	2886	54 46 30	2872	56 19 25	2858	57 52 38	2843
	Jupiter	W.	51 40 55	2845	53 14 24	2831	54 48 12	2817	56 22 18	2802
	Antares	E.	47 20 16	2883	45 47 36	2872	44 14 41	2859	42 41 30	2847
	Sun	E.	99 48 22	3249	98 23 11	3235	96 57 43	3220	95 31 57	3205
21	Pollux	W.	101 56 56	2754	103 32 24	2738	105 8 13	2722	106 44 24	2705
	Regulus	W.	65 43 35	2766	67 18 48	2750	68 54 22	2732	70 30 19	2716
	Jupiter	W.	64 17 39	2726	65 53 44	2710	67 30 11	2692	69 7 1	2675
	Antares	E.	34 51 27	2782	33 16 35	2769	31 41 26	2756	30 6 1	2744
	Sun	E.	88 18 32	3124	86 50 51	3107	85 22 50	3089	83 54 27	3071
22	Regulus	W.	78 35 48	2627	80 14 6	2609	81 52 49	2591	83 31 57	2572
	Jupiter	W.	77 16 57	2588	78 56 8	2570	80 35 44	2551	82 15 46	2533
	Antares	E.	22 4 58	2692	20 28 7	2657	18 51 10	2687	17 14 12	2691
	Sun	E.	76 26 54	2977	74 56 13	2958	73 25 7	2939	71 53 37	2919
23	Regulus	W.	91 54 8	2477	93 35 54	2453	95 18 7	2438	97 0 47	2419
	Jupiter	W.	90 42 29	2438	92 25 9	2419	94 8 16	2400	95 51 51	2380
	Spica	W.	37 57 21	2510	39 38 21	2487	41 19 53	2465	43 1 56	2443
	Mars	W.	29 22 44	2604	31 1 34	2583	32 40 52	2563	34 20 38	2543
	Sun	E.	64 9 45	2818	62 35 41	2798	61 1 10	2778	59 26 13	2757
24	Regulus	W.	105 40 54	2325	107 26 17	2307	109 12 6	2289	110 58 22	2272
	Jupiter	W.	104 36 37	2287	106 22 56	2268	108 9 42	2251	109 56 54	2233
	Spica	W.	51 39 44	2339	53 24 47	2320	55 10 18	2300	56 56 17	2281
	Mars	W.	42 46 22	2444	44 28 54	2424	46 11 54	2405	47 55 21	2387
	Sun	E.	51 24 53	2660	49 47 19	2641	48 9 20	2623	46 30 56	2604
25	Jupiter	W.	118 59 26	2149	120 49 11	2133	122 39 20	2118	124 29 51	2104
	Spica	W.	65 53 10	2190	67 41 52	2174	69 30 59	2157	71 20 31	2142
	Mars	W.	56 39 13	2297	58 25 17	2281	60 11 45	2264	61 58 37	2248
	Sun	E.	38 12 59	2523	36 32 18	2509	34 51 17	2496	33 9 58	2485
26	Mars	W.	70 58 35	2178	72 47 36	2165	74 36 56	2154	76 26 33	2143
30	Sun	W.	32 41 55	2410	34 25 15	2419	36 8 22	2430	37 51 14	2441
	α Arietis	E.	54 8 40	2208	52 20 24	2229	50 32 39	2250	48 45 26	2272
	Aldebaran	E.	83 58 34	2081	82 7 6	2094	80 15 57	2107	78 25 8	2120
31	Sun	W.	46 21 13	2510	48 2 13	2525	49 42 51	2541	51 23 7	2559
	α Arietis	E.	39 58 40	2418	38 15 31	2455	36 33 14	2495	34 51 54	2540
	Aldebaran	E.	69 16 29	2196	67 27 56	2212	65 39 47	2230	63 52 4	2247
	Pollux	E.	113 20 30	2173	111 31 22	2189	109 42 38	2205	107 54 18	2221

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Merid-ian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	21 0 59.01	10.176	S. 16 59 18.9	43.02	16 15.93	68.22	13 54.37	0.319
Sun.	2	21 5 2.83	10.141	16 41 57.5	43.76	16 15.78	68.11	14 1.62	0.284
Mon.	3	21 9 5.82	10.105	16 24 18.8	44.47	16 15.63	67.99	14 8.03	0.247
Tues.	4	21 13 7.96	10.070	16 6 23.0	45.16	16 15.47	67.88	14 13.59	0.214
Wed.	5	21 17 9.25	10.036	15 48 10.8	45.85	16 15.31	67.76	14 18.31	0.180
Thur.	6	21 21 9.71	10.002	15 29 42.3	46.51	16 15.15	67.65	14 22.22	0.146
Frid.	7	21 25 9.36	9.968	15 10 58.1	47.16	16 14.98	67.54	14 25.30	0.112
Sat.	8	21 29 8.19	9.934	14 51 58.7	47.79	16 14.81	67.43	14 27.57	0.078
Sun.	9	21 33 6.21	9.901	14 32 44.4	48.41	16 14.63	67.31	14 29.04	0.045
Mon.	10	21 37 3.44	9.868	14 13 15.7	49.00	16 14.45	67.20	14 29.70	0.012
Tues.	11	21 40 59.88	9.836	13 53 32.9	49.57	16 14.26	67.09	14 29.58	0.020
Wed.	12	21 44 55.56	9.803	13 33 36.5	50.13	16 14.07	66.98	14 28.71	0.053
Thur.	13	21 48 50.48	9.773	13 13 26.9	50.68	16 13.87	66.87	14 27.07	0.083
Frid.	14	21 52 44.65	9.742	12 53 4.5	51.19	16 13.67	66.76	14 24.69	0.113
Sat.	15	21 56 38.09	9.712	12 32 29.5	51.70	16 13.46	66.66	14 21.59	0.143
Sun.	16	22 0 30.81	9.683	12 11 42.4	52.20	16 13.25	66.56	14 17.77	0.172
Mon.	17	22 4 22.83	9.654	11 50 43.7	52.68	16 13.04	66.46	14 13.25	0.201
Tues.	18	22 8 14.18	9.626	11 29 33.8	53.15	16 12.82	66.36	14 8.06	0.229
Wed.	19	22 12 4.87	9.599	11 8 12.9	53.59	16 12.60	66.26	14 2.20	0.256
Thur.	20	22 15 54.91	9.572	10 46 41.5	54.01	16 12.37	66.16	13 55.70	0.283
Frid.	21	22 19 44.32	9.546	10 25 0.1	54.43	16 12.14	66.07	13 48.57	0.309
Sat.	22	22 23 33.09	9.520	10 3 9.1	54.82	16 11.91	65.98	13 40.81	0.335
Sun.	23	22 27 21.25	9.494	9 41 8.8	55.20	16 11.67	65.89	13 32.45	0.361
Mon.	24	22 31 8.81	9.470	9 18 59.6	55.57	16 11.44	65.80	13 23.47	0.385
Tues.	25	22 34 55.79	9.446	8 56 41.8	55.91	16 11.20	65.71	13 13.93	0.409
Wed.	26	22 38 42.20	9.423	8 34 16.0	56.24	16 10.96	65.63	13 3.81	0.432
Thur.	27	22 42 28.05	9.400	8 11 42.6	56.54	16 10.72	65.55	12 53.14	0.455
Frid.	28	22 46 13.36	9.378	7 49 2.2	56.83	16 10.48	65.47	12 41.93	0.477
Sat.	29	22 49 58.15	9.356	S. 7 26 15.1	57.10	16 10.24	65.40	12 30.20	0.499

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	21 0 56.65	10.175	S. 16 59 28.9	43.01	13 54.29	0.319	20 47 2.36
Sun.	2	21 5 0.46	10.140	16 42 7.7	43.75	14 1.54	0.284	20 50 58.92
Mon.	3	21 9 3.44	10.105	16 24 29.2	44.46	14 7.97	0.247	20 54 55.47
Tues.	4	21 13 5.57	10.070	16 6 33.7	45.15	14 13.54	0.214	20 58 52.03
Wed.	5	21 17 6.86	10.036	15 48 21.6	45.84	14 18.27	0.180	21 2 48.59
Thur.	6	21 21 7.32	10.002	15 29 53.4	46.50	14 22.18	0.146	21 6 45.14
Frid.	7	21 25 6.97	9.968	15 11 9.4	47.15	14 25.27	0.112	21 10 41.70
Sat.	8	21 29 5.80	9.934	14 52 10.3	47.78	14 27.55	0.078	21 14 38.25
Sun.	9	21 33 3.82	9.901	14 32 56.1	48.40	14 29.01	0.045	21 18 34.81
Mon.	10	21 37 1.05	9.868	14 13 27.5	48.99	14 29.69	0.012	21 22 31.36
Tues.	11	21 40 57.50	9.836	13 53 44.8	49.56	14 29.58	0.020	21 26 27.92
Wed.	12	21 44 53.19	9.803	13 33 48.6	50.12	14 28.72	0.053	21 30 24.47
Thur.	13	21 48 48.12	9.773	13 13 39.1	50.67	14 27.09	0.083	21 34 21.03
Frid.	14	21 52 42.30	9.743	12 53 16.7	51.19	14 24.72	0.113	21 38 17.58
Sat.	15	21 56 35.76	9.713	12 32 41.8	51.70	14 21.62	0.143	21 42 14.14
Sun.	16	22 0 28.50	9.684	12 11 54.8	52.20	14 17.81	0.172	21 46 10.69
Mon.	17	22 4 20.54	9.655	11 50 56.2	52.68	14 13.29	0.201	21 50 7.25
Tues.	18	22 8 11.92	9.627	11 29 46.3	53.15	14 8.12	0.229	21 54 3.80
Wed.	19	22 12 2.62	9.600	11 8 25.4	53.59	14 2.26	0.256	21 58 0.36
Thur.	20	22 15 52.68	9.573	10 46 54.0	54.01	13 55.77	0.283	22 1 56.91
Frid.	21	22 19 42.11	9.547	10 25 12.6	54.43	13 48.64	0.309	22 5 53.47
Sat.	22	22 23 30.91	9.521	10 3 21.6	54.82	13 40.89	0.335	22 9 50.02
Sun.	23	22 27 19.10	9.495	9 41 21.2	55.20	13 32.54	0.361	22 13 46.56
Mon.	24	22 31 6.69	9.471	9 19 11.9	55.57	13 23.56	0.385	22 17 43.13
Tues.	25	22 34 53.70	9.447	8 56 54.0	55.91	13 14.02	0.409	22 21 39.68
Wed.	26	22 38 40.14	9.424	8 34 28.1	56.24	13 3.90	0.432	22 25 36.24
Thur.	27	22 42 26.02	9.401	8 11 54.8	56.54	12 53.23	0.455	22 29 32.79
Frid.	28	22 46 11.37	9.379	7 49 14.3	56.83	12 42.03	0.477	22 33 29.34
Sat.	29	22 49 56.20	9.357	S. 7 26 27.0	57.11	12 30.30	0.499	22 37 25.90
Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.								Diff. for 1 hour. $+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	THE SUN'S Diff. for 1 hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	32	312 46 22.3	46 31.3	152.18	−0.62	9.9937564	+27.2	3 12 26.02
2	33	313 47 14.0	47 22.9	152.12	0.54	.9938224	27.8	3 8 30.11
3	34	314 48 4.2	48 13.0	152.06	0.45	.9938900	28.5	3 4 34.20
4	35	315 48 53.0	49 1.7	152.00	0.34	.9939593	29.2	3 0 38.29
5	36	316 49 40.3	49 48.8	151.94	0.21	.9940304	30.0	2 56 42.37
6	37	317 50 26.1	50 34.4	151.88	−0.07	.9941034	30.8	2 52 46.46
7	38	318 51 10.4	51 18.6	151.81	+0.06	.9941784	31.6	2 48 50.55
8	39	319 51 53.2	52 1.3	151.75	0.19	.9942554	32.5	2 44 54.64
9	40	320 52 34.4	52 42.4	151.68	0.29	.9943345	33.4	2 40 58.73
10	41	321 53 14.0	53 21.8	151.62	0.37	.9944158	34.3	2 37 2.82
11	42	322 53 52.0	53 59.6	151.55	0.43	.9944994	35.3	2 33 6.91
12	43	323 54 28.5	54 36.0	151.49	0.45	.9945852	36.2	2 29 11.00
13	44	324 55 3.6	55 11.0	151.43	0.45	.9946733	37.2	2 25 15.10
14	45	325 55 37.3	55 44.6	151.37	0.42	.9947637	38.0	2 21 19.19
15	46	326 56 9.6	56 16.7	151.31	+0.35	.9948561	38.9	2 17 23.28
16	47	327 56 40.6	56 47.6	151.26	0.25	.9949503	39.7	2 13 27.37
17	48	328 57 10.3	57 17.2	151.20	0.14	.9950464	40.4	2 9 31.45
18	49	329 57 38.7	57 45.5	151.15	+0.02	.9951444	41.1	2 5 35.53
19	50	330 58 5.6	58 12.3	151.09	−0.11	.9952440	41.7	2 1 39.62
20	51	331 58 31.2	58 37.7	151.03	0.24	.9953451	42.2	1 57 43.72
21	52	332 58 55.5	59 1.9	150.97	0.37	.9954473	42.7	1 53 47.82
22	53	333 59 18.4	59 24.7	150.91	0.50	.9955506	43.2	1 49 51.91
23	54	334 59 39.8	59 46.0	150.85	0.60	.9956549	43.6	1 45 56.00
24	55	335 59 59.6	60 5.7	150.79	0.66	.9957602	44.0	1 42 0.10
25	56	337 0 17.9	0 23.8	150.72	0.70	.9958663	44.3	1 38 4.20
26	57	338 0 34.7	0 40.5	150.65	0.70	.9959730	44.5	1 34 8.29
27	58	339 0 49.7	0 55.4	150.58	0.69	.9960802	44.7	1 30 12.38
28	59	340 1 2.8	1 8.4	150.50	0.65	.9961880	44.9	1 26 16.47
29	60	341 1 14.0	1 19.5	150.42	−0.58	9.9962963	+45.2	1 22 20.56

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
−9s.8296

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 17.8	16 10.5	59 42.1	−2.17	59 15.3	−2.28	3 48.0	2.04	3.8
2	16 2.9	15 55.3	58 47.6	2.33	58 19.5	2.33	4 36.2	1.98	4.8
3	15 47.8	15 40.4	57 51.8	2.29	57 24.8	2.21	5 23.8	1.98	5.8
4	15 33.4	15 26.7	56 58.9	2.10	56 34.4	1.97	6 11.8	2.02	6.8
5	15 20.5	15 14.8	56 11.6	1.83	55 50.6	1.68	7 0.8	2.07	7.8
6	15 9.5	15 4.8	55 31.4	1.52	55 14.1	1.36	7 51.1	2.12	8.8
7	15 0.6	14 56.9	54 58.7	1.20	54 45.1	1.05	8 42.4	2.15	9.8
8	14 53.8	14 51.1	54 33.4	0.90	54 23.5	0.76	9 34.0	2.14	10.8
9	14 48.8	14 46.9	54 15.2	0.62	54 8.5	0.49	10 24.7	2.08	11.8
10	14 45.6	14 44.6	54 3.3	0.37	53 59.6	0.25	11 13.7	1.99	12.8
11	14 43.9	14 43.6	53 57.3	−0.14	53 56.3	−0.03	12 0.4	1.89	13.8
12	14 43.7	14 44.1	53 56.6	+0.07	53 58.1	+0.18	12 44.8	1.80	14.8
13	14 44.9	14 46.0	54 0.9	0.29	54 5.0	0.40	13 27.1	1.73	15.8
14	14 47.5	14 49.4	54 10.5	0.52	54 17.4	0.64	14 8.1	1.69	16.8
15	14 51.7	14 54.4	54 25.8	0.76	54 35.7	0.89	14 48.6	1.69	17.8
16	14 57.5	15 1.1	54 47.2	1.02	55 0.4	1.16	15 29.4	1.73	18.8
17	15 5.1	15 9.6	55 15.2	1.31	55 31.7	1.45	16 11.7	1.81	19.8
18	15 14.6	15 20.1	55 50.0	1.60	56 10.1	1.74	16 56.8	1.95	20.8
19	15 26.0	15 32.3	56 31.8	1.88	56 55.1	2.01	17 45.6	2.14	21.8
20	15 39.0	15 46.1	57 19.8	2.11	57 45.7	2.20	18 39.0	2.33	22.8
21	15 53.4	16 0.8	58 12.4	2.25	58 39.6	2.27	19 37.3	2.52	23.8
22	16 8.1	16 15.3	59 6.6	2.23	59 32.9	2.15	20 39.2	2.64	24.8
23	16 22.1	16 28.3	59 57.9	2.01	60 20.8	1.81	21 42.8	2.61	25.8
24	16 33.8	16 38.4	60 41.0	1.55	60 57.8	1.23	22 45.4	2.55	26.8
25	16 41.9	16 44.1	61 10.5	0.67	61 18.6	+0.48	23 45.0	2.39	27.8
26	16 45.0	16 44.5	61 21.9	+0.07	61 20.2	−0.35	δ		28.8
27	16 42.6	16 39.5	61 13.5	−0.76	61 1.9	1.15	0 41.0	2.26	0.4
28	16 35.2	16 29.8	60 45.9	1.50	60 26.0	1.81	1 33.9	2.15	1.4
29	16 23.4	16 16.4	60 2.8	−2.05	59 37.0	−2.24	2 24.5	2.08	2.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 27 28.03	2.1503	S. 1 30 33.2	15.903
1	0 29 36.94	2.1471	1 14 39.4	15.889
2	0 31 45.67	2.1440	0 58 46.5	15.875
3	0 33 54.21	2.1409	0 42 54.4	15.860
4	0 36 2.57	2.1378	0 27 3.3	15.842
5	0 38 10.75	2.1348	S. 0 11 13.4	15.822
6	0 40 18.74	2.1319	N. 0 4 35.4	15.802
7	0 42 26.57	2.1292	0 20 22.9	15.781
8	0 44 34.24	2.1265	0 36 9.1	15.758
9	0 46 41.75	2.1240	0 51 53.8	15.733
10	0 48 49.11	2.1215	1 7 37.0	15.707
11	0 50 56.32	2.1190	1 23 18.6	15.680
12	0 53 3.38	2.1166	1 38 58.6	15.651
13	0 55 10.30	2.1144	1 54 36.8	15.621
14	0 57 17.09	2.1122	2 10 13.1	15.590
15	0 59 23.76	2.1101	2 25 47.5	15.557
16	1 1 30.30	2.1080	2 41 19.9	15.523
17	1 3 36.72	2.1061	2 56 50.3	15.488
18	1 5 43.02	2.1042	3 12 18.5	15.452
19	1 7 49.21	2.1025	3 27 44.5	15.414
20	1 9 55.30	2.1008	3 43 8.2	15.375
21	1 12 1.30	2.0991	3 58 29.5	15.335
22	1 14 7.20	2.0975	4 13 48.4	15.293
23	1 16 13.01	2.0960	N. 4 29 4.7	15.249

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 18 18.72	2.0946	N. 4 44 18.3	15.205
1	1 20 24.35	2.0934	4 59 29.3	15.161
2	1 22 29.91	2.0922	5 14 37.6	15.115
3	1 24 35.41	2.0910	5 29 43.1	15.068
4	1 26 40.84	2.0899	5 44 45.7	15.020
5	1 28 46.19	2.0888	5 59 45.4	14.970
6	1 30 51.48	2.0878	6 14 42.1	14.919
7	1 32 56.72	2.0870	6 29 35.7	14.867
8	1 35 1.91	2.0863	6 44 26.1	14.815
9	1 37 7.06	2.0856	6 59 13.4	14.761
10	1 39 12.17	2.0849	7 13 57.4	14.705
11	1 41 17.24	2.0843	7 28 38.0	14.648
12	1 43 22.27	2.0837	7 43 15.2	14.591
13	1 45 27.27	2.0833	7 57 49.0	14.533
14	1 47 32.25	2.0829	8 12 19.2	14.474
15	1 49 37.22	2.0826	8 26 45.8	14.413
16	1 51 42.17	2.0824	8 41 8.8	14.352
17	1 53 47.10	2.0822	8 55 28.1	14.290
18	1 55 52.02	2.0820	9 9 43.6	14.227
19	1 57 56.94	2.0820	9 23 55.3	14.162
20	2 0 1.86	2.0821	9 38 3.0	14.097
21	2 2 6.79	2.0822	9 52 6.8	14.030
22	2 4 11.72	2.0823	10 6 6.6	13.963
23	2 6 16.66	2.0826	10 20 2.3	13.894
24	2 8 21.62	2.0829	N.10 33 53.9	13.825

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 8 21.62	2.0829	N.10 33 53.9	13.825
1	2 10 26.60	2.0832	10 47 41.3	13.755
2	2 12 31.60	2.0836	11 1 24.5	13.684
3	2 14 36.63	2.0840	11 15 3.4	13.612
4	2 16 41.69	2.0845	11 28 37.9	13.538
5	2 18 46.78	2.0851	11 42 8.0	13.464
6	2 20 51.90	2.0857	11 55 33.6	13.389
7	2 22 57.06	2.0864	12 8 54.7	13.314
8	2 25 2.27	2.0872	12 22 11.3	13.237
9	2 27 7.53	2.0880	12 35 23.3	13.160
10	2 29 12.84	2.0888	12 48 30.5	13.082
11	2 31 18.20	2.0897	13 1 33.0	13.003
12	2 33 23.60	2.0906	13 14 30.8	12.923
13	2 35 29.06	2.0917	13 27 23.7	12.842
14	2 37 34.59	2.0928	13 40 11.8	12.760
15	2 30 40.20	2.0939	13 52 55.0	12.678
16	2 41 45.87	2.0951	14 5 33.1	12.594
17	2 43 51.60	2.0962	14 18 6.2	12.509
18	2 45 57.40	2.0974	14 30 34.2	12.424
19	2 48 3.28	2.0987	14 42 57.1	12.338
20	2 50 9.24	2.1001	14 55 14.8	12.251
21	2 52 15.29	2.1015	15 7 27.3	12.164
22	2 54 21.42	2.1029	15 19 34.5	12.076
23	2 56 27.64	2.1043	N.15 31 36.4	11.987

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 58 33.94	2.1058	N.15 43 32.9	11.897
1	3 0 40.33	2.1074	15 55 24.0	11.806
2	3 2 46.82	2.1090	16 7 9.6	11.715
3	3 4 53.41	2.1106	16 18 49.7	11.623
4	3 7 0.09	2.1122	16 30 24.3	11.529
5	3 9 6.88	2.1139	16 41 53.3	11.435
6	3 11 13.77	2.1157	16 53 16.5	11.340
7	3 13 20.76	2.1174	17 4 34.1	11.245
8	3 15 27.86	2.1192	17 15 46.0	11.149
9	3 17 35.06	2.1209	17 26 52.1	11.053
10	3 19 42.37	2.1227	17 37 52.3	10.955
11	3 21 49.79	2.1246	17 48 46.7	10.857
12	3 23 57.32	2.1265	17 59 35.1	10.758
13	3 26 4.97	2.1284	18 10 17.6	10.658
14	3 28 12.73	2.1303	18 20 54.1	10.553
15	3 30 20.61	2.1322	18 31 24.6	10.457
16	3 32 28.60	2.1342	18 41 49.0	10.355
17	3 34 36.71	2.1362	18 52 7.2	10.253
18	3 36 44.95	2.1383	19 2 19.3	10.150
19	3 38 53.31	2.1403	19 12 25.2	10.046
20	3 41 1.79	2.1423	19 22 24.8	9.941
21	3 43 10.38	2.1443	19 32 18.1	9.836
22	3 45 19.10	2.1464	19 42 5.1	9.730
23	3 47 27.94	2.1485	19 51 45.7	9.623
24	3 49 36.91	2.1506	N.20 1 19.9	9.516

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 49 36.91	2.1506	N.20 1 19.9	9.516
1	3 51 46.00	2.1526	20 10 47.6	9.408
2	3 53 55.22	2.1547	20 20 8.9	9.300
3	3 56 4.57	2.1568	20 29 23.6	9.191
4	3 58 14.04	2.1589	20 38 31.8	9.082
5	4 0 23.64	2.1610	20 47 33.4	8.972
6	4 2 33.36	2.1631	20 56 28.4	8.861
7	4 4 43.21	2.1652	21 5 16.7	8.749
8	4 6 53.19	2.1673	21 13 58.2	8.637
9	4 9 3.29	2.1694	21 22 33.0	8.524
10	4 11 13.52	2.1716	21 31 1.1	8.411
11	4 13 23.87	2.1737	21 39 22.3	8.297
12	4 15 34.35	2.1758	21 47 36.7	8.182
13	4 17 44.95	2.1778	21 55 44.1	8.067
14	4 19 55.68	2.1798	22 3 44.7	7.952
15	4 22 6.53	2.1818	22 11 38.3	7.836
16	4 24 17.50	2.1839	22 19 25.0	7.719
17	4 26 28.59	2.1859	22 27 4.6	7.602
18	4 28 39.81	2.1880	22 34 37.2	7.484
19	4 30 51.15	2.1900	22 42 2.7	7.366
20	4 33 2.60	2.1919	22 49 21.1	7.247
21	4 35 14.17	2.1939	22 56 32.4	7.128
22	4 37 25.86	2.1958	23 3 36.5	7.008
23	4 39 37.66	2.1977	N.23 10 33.4	6.887

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 41 49.58	2.1996	N.23 17 23.0	6.767
1	4 44 1.61	2.2014	23 24 5.4	6.646
2	4 46 13.75	2.2032	23 30 40.5	6.524
3	4 48 26.00	2.2050	23 37 8.3	6.402
4	4 50 38.35	2.2067	23 43 28.8	6.279
5	4 52 50.81	2.2085	23 49 41.9	6.156
6	4 55 3.37	2.2102	23 55 47.6	6.033
7	4 57 16.04	2.2119	24 1 45.9	5.910
8	4 59 28.80	2.2136	24 7 36.7	5.785
9	5 1 41.66	2.2152	24 13 20.1	5.660
10	5 3 54.62	2.2167	24 18 56.0	5.535
11	5 6 7.66	2.2181	24 24 24.4	5.410
12	5 8 20.79	2.2196	24 29 45.3	5.283
13	5 10 34.01	2.2211	24 34 58.7	5.159
14	5 12 47.32	2.2225	24 40 4.4	5.032
15	5 15 0.72	2.2239	24 45 2.5	4.905
16	5 17 14.19	2.2252	24 49 53.1	4.778
17	5 19 27.74	2.2264	24 54 36.0	4.651
18	5 21 41.36	2.2276	24 59 11.3	4.524
19	5 23 55.05	2.2288	25 3 39.0	4.396
20	5 26 8.81	2.2299	25 7 58.9	4.268
21	5 28 22.64	2.2310	25 12 11.1	4.139
22	5 30 36.53	2.2320	25 16 15.6	4.010
23	5 32 50.48	2.2329	25 20 12.4	3.881
24	5 35 4.48	2.2338	N.25 24 1.5	3.752

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 35 4.48	2.2338	N.25 24 1.5	3.752
1	5 37 18.54	2.2347	25 27 42.8	3.623
2	5 39 32.65	2.2355	25 31 16.3	3.493
3	5 41 46.80	2.2363	25 34 42.0	3.363
4	5 44 1.00	2.2371	25 38 0.0	3.234
5	5 46 15.24	2.2377	25 41 10.2	3.104
6	5 48 29.51	2.2382	25 44 12.5	2.974
7	5 50 43.81	2.2386	25 47 7.0	2.843
8	5 52 58.14	2.2390	25 49 53.7	2.713
9	5 55 12.49	2.2394	25 52 32.6	2.582
10	5 57 26.86	2.2398	25 55 3.7	2.451
11	5 59 41.25	2.2401	25 57 26.9	2.320
12	6 1 55.66	2.2403	25 59 42.1	2.189
13	6 4 10.08	2.2404	26 1 49.5	2.058
14	6 6 24.50	2.2405	26 3 49.1	1.927
15	6 8 38.93	2.2405	26 5 40.9	1.797
16	6 10 53.36	2.2404	26 7 24.9	1.666
17	6 13 7.78	2.2402	26 9 0.9	1.534
18	6 15 22.18	2.2399	26 10 29.0	1.403
19	6 17 36.57	2.2397	26 11 49.3	1.273
20	6 19 50.95	2.2394	26 13 1.7	1.142
21	6 22 5.31	2.2390	26 14 6.3	1.011
22	6 24 19.64	2.2386	26 15 3.0	0.880
23	6 26 33.94	2.2380	N.26 15 51.9	0.749

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 28 48.20	2.2374	N.26 16 32.9	0.618
1	6 31 2.42	2.2367	26 17 6.1	0.488
2	6 33 16.60	2.2360	26 17 31.4	0.357
3	6 35 30.75	2.2352	26 17 48.9	0.227
4	6 37 44.85	2.2344	26 17 58.6	+0.097
5	6 39 58.89	2.2334	26 18 0.5	−0.033
6	6 42 12.86	2.2324	26 17 54.6	0.163
7	6 44 26.77	2.2313	26 17 40.9	0.293
8	6 46 40.62	2.2302	26 17 19.4	0.423
9	6 48 54.41	2.2290	26 16 50.1	0.553
10	6 51 8.12	2.2278	26 16 13.1	0.682
11	6 53 21.75	2.2264	26 15 28.4	0.811
12	6 55 35.29	2.2250	26 14 35.9	0.940
13	6 57 48.75	2.2235	26 13 35.7	1.068
14	7 0 2.12	2.2220	26 12 27.8	1.196
15	7 2 15.39	2.2204	26 11 12.2	1.324
16	7 4 28.57	2.2188	26 9 48.9	1.451
17	7 6 41.65	2.2171	26 8 18.0	1.578
18	7 8 54.62	2.2153	26 6 39.6	1.705
19	7 11 7.48	2.2134	26 4 53.5	1.831
20	7 13 20.23	2.2115	26 2 59.8	1.958
21	7 15 32.87	2.2095	26 0 58.5	2.084
22	7 17 45.39	2.2075	25 58 49.7	2.210
23	7 19 57.78	2.2054	25 56 33.4	2.334
24	7 22 10.03	2.2033	N.25 54 9.6	2.459

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 22 10.03	2.2033	N.25 54 9.6	2.459
1	7 24 22.16	2.2010	25 51 38.3	2.584
2	7 26 34.16	2.1987	25 48 59.6	2.708
3	7 28 46.02	2.1964	25 46 13.4	2.831
4	7 30 57.74	2.1940	25 43 19.8	2.954
5	7 33 9.31	2.1915	25 40 18.9	3.076
6	7 35 20.73	2.1890	25 37 10.7	3.198
7	7 37 32.00	2.1864	25 33 55.2	3.320
8	7 39 43.11	2.1838	25 30 32.4	3.441
9	7 41 54.07	2.1811	25 27 2.2	3.562
10	7 44 4.86	2.1784	25 23 24.8	3.682
11	7 46 15.49	2.1756	25 19 40.3	3.802
12	7 48 25.95	2.1726	25 15 48.7	3.921
13	7 50 36.24	2.1700	25 11 49.9	4.039
14	7 52 46.36	2.1671	25 7 44.0	4.157
15	7 54 56.30	2.1641	25 3 31.1	4.274
16	7 57 6.06	2.1611	24 59 11.1	4.391
17	7 59 15.63	2.1580	24 54 44.1	4.508
18	8 1 25.02	2.1549	24 50 10.2	4.623
19	8 3 34.23	2.1518	24 45 29.4	4.738
20	8 5 43.25	2.1487	24 40 41.7	4.852
21	8 7 52.07	2.1455	24 35 47.1	4.966
22	8 10 0.70	2.1422	24 30 45.7	5.079
23	8 12 9.14	2.1389	N.24 25 37.5	5.192

MONDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 14 17.39	2.1356	N.24 20 22.6	5.304
1	8 16 25.43	2.1323	24 15 1.0	5.415
2	8 18 33.27	2.1289	24 9 32.7	5.526
3	8 20 40.90	2.1255	24 3 57.8	5.636
4	8 22 48.33	2.1221	23 58 16.3	5.745
5	8 24 55.55	2.1186	23 52 28.3	5.854
6	8 27 2.56	2.1151	23 46 33.8	5.962
7	8 29 9.36	2.1115	23 40 32.8	6.069
8	8 31 15.94	2.1080	23 34 25.4	6.176
9	8 33 22.31	2.1044	23 28 11.6	6.281
10	8 35 28.47	2.1008	23 21 51.5	6.386
11	8 37 34.41	2.0972	23 15 25.1	6.491
12	8 39 40.13	2.0935	23 8 52.5	6.595
13	8 41 45.63	2.0898	23 2 13.7	6.698
14	8 43 50.91	2.0861	22 55 28.7	6.801
15	8 45 55.97	2.0824	22 48 37.5	6.902
16	8 48 0.80	2.0787	22 41 40.3	7.003
17	8 50 5.41	2.0749	22 34 37.1	7.103
18	8 52 9.79	2.0712	22 27 27.9	7.202
19	8 54 13.95	2.0674	22 20 12.7	7.301
20	8 56 17.88	2.0636	22 12 51.7	7.399
21	8 58 21.59	2.0598	22 5 24.8	7.496
22	9 0 25.06	2.0561	21 57 52.1	7.593
23	9 2 28.31	2.0523	21 50 13.7	7.689
24	9 4 31.33	2.0485	N.21 42 29.5	7.783

TUESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 4 31.33	2.0485	N.21 42 29.5	7.783
1	9 6 34.13	2.0447	21 34 39.6	7.877
2	9 8 36.69	2.0409	21 26 44.2	7.970
3	9 10 39.03	2.0370	21 18 43.3	8.062
4	9 12 41.13	2.0332	21 10 36.8	8.154
5	9 14 43.01	2.0293	21 2 24.8	8.245
6	9 16 44.65	2.0255	20 54 7.3	8.335
7	9 18 46.07	2.0217	20 45 44.4	8.424
8	9 20 47.26	2.0179	20 37 16.3	8.513
9	9 22 48.22	2.0141	20 28 42.9	8.600
10	9 24 48.95	2.0103	20 20 4.2	8.687
11	9 26 49.46	2.0065	20 11 20.3	8.774
12	9 28 49.73	2.0027	20 2 31.3	8.859
13	9 30 49.78	1.9989	19 53 37.2	8.944
14	9 32 49.60	1.9951	19 44 38.1	9.028
15	9 34 49.20	1.9914	19 35 33.9	9.110
16	9 36 48.57	1.9877	19 26 24.8	9.192
17	9 38 47.72	1.9840	19 17 10.8	9.274
18	9 40 46.65	1.9803	19 7 51.9	9.354
19	9 42 45.36	1.9766	18 58 28.2	9.434
20	9 44 43.84	1.9729	18 48 59.8	9.513
21	9 46 42.10	1.9692	18 39 26.6	9.591
22	9 48 40.14	1.9655	18 29 48.8	9.668
23	9 50 37.96	1.9618	N.18 20 6.4	9.745

WEDNESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 52 35.56	1.9582	N.18 10 19.4	9.820
1	9 54 32.95	1.9547	18 0 27.9	9.895
2	9 56 30.12	1.9512	17 50 32.0	9.969
3	9 58 27.08	1.9477	17 40 31.6	10.043
4	10 0 23.84	1.9442	17 30 26.8	10.115
5	10 2 20.39	1.9407	17 20 17.7	10.187
6	10 4 16.72	1.9372	17 10 4.4	10.258
7	10 6 12.84	1.9337	16 59 46.8	10.328
8	10 8 8.76	1.9303	16 49 25.1	10.397
9	10 10 4.48	1.9270	16 38 59.2	10.466
10	10 12 0.00	1.9236	16 28 29.2	10.533
11	10 13 55.32	1.9203	16 17 55.2	10.600
12	10 15 50.44	1.9170	16 7 17.2	10.666
13	10 17 45.37	1.9138	15 56 35.3	10.731
14	10 19 40.10	1.9106	15 45 49.5	10.795
15	10 21 34.64	1.9074	15 34 59.9	10.859
16	10 23 28.98	1.9042	15 24 6.4	10.922
17	10 25 23.14	1.9011	15 13 9.2	10.984
18	10 27 17.11	1.8980	15 2 8.4	11.045
19	10 29 10.90	1.8949	14 51 3.9	11.105
20	10 31 4.50	1.8919	14 39 55.8	11.165
21	10 32 57.93	1.8890	14 28 44.1	11.224
22	10 34 51.18	1.8861	14 17 28.9	11.282
23	10 36 44.26	1.8832	14 6 10.3	11.340
24	10 38 37.17	1.8803	N.13 54 48.2	11.396

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 13.					SATURDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 38 37.17	1.8803	N. 13 54 48.2	11.396	0	12 6 29.60	1.8016	N. 3 57 20.4	13.210
1	10 40 29.90	1.8775	13 43 22.7	11.452	1	12 8 17.68	1.8014	3 44 7.2	13.230
2	10 42 22.47	1.8748	13 31 54.0	11.506	2	12 10 5.75	1.8012	3 30 52.9	13.249
3	10 44 14.88	1.8721	13 20 22.0	11.560	3	12 11 53.82	1.8011	3 17 37.4	13.268
4	10 46 7.12	1.8694	13 8 46.8	11.613	4	12 13 41.88	1.8010	3 4 20.8	13.285
5	10 47 59.20	1.8667	12 57 8.4	11.665	5	12 15 29.94	1.8010	2 51 3.2	13.301
6	10 49 51.13	1.8611	12 45 26.9	11.717	6	12 17 17.99	1.8010	2 37 44.7	13.317
7	10 51 42.90	1.8615	12 33 42.4	11.768	7	12 19 6.05	1.8012	2 24 25.2	13.333
8	10 53 34.51	1.8590	12 21 54.7	11.819	8	12 20 54.12	1.8014	2 11 4.8	13.347
9	10 55 25.98	1.8566	12 10 4.0	11.869	9	12 22 42.21	1.8017	1 57 43.5	13.361
10	10 57 17.31	1.8542	11 58 10.4	11.918	10	12 24 30.32	1.8020	1 44 21.5	13.374
11	10 59 8.49	1.8518	11 46 13.9	11.966	11	12 26 18.45	1.8024	1 30 58.6	13.387
12	11 0 59.53	1.8495	11 34 14.5	12.013	12	12 28 6.60	1.8028	1 17 35.0	13.398
13	11 2 50.43	1.8472	11 22 12.3	12.060	13	12 29 54.78	1.8033	1 4 10.7	13.409
14	11 4 41.19	1.8150	11 10 7.4	12.105	14	12 31 43.00	1.8039	0 50 45.9	13.419
15	11 6 31.83	1.8429	10 57 59.8	12.149	15	12 33 31.25	1.8046	0 37 20.5	13.428
16	11 8 22.34	1.8408	10 45 49.5	12.193	16	12 35 19.54	1.8053	0 23 54.6	13.437
17	11 10 12.72	1.8387	10 33 36.6	12.236	17	12 37 7.88	1.8061	N. 0 10 28.0	13.445
18	11 12 2.98	1.8367	10 21 21.1	12.279	18	12 38 56.27	1.8069	S. 0 2 58.9	13.452
19	11 13 53.12	1.8347	10 9 3.1	12.321	19	12 40 44.71	1.8078	0 16 26.2	13.458
20	11 15 43.14	1.8328	9 56 42.6	12.362	20	12 42 33.21	1.8088	0 29 53.8	13.464
21	11 17 33.05	1.8309	9 44 19.6	12.403	21	12 44 21.77	1.8099	0 43 21.8	13.469
22	11 19 22.85	1.8291	9 31 54.3	12.442	22	12 46 10.40	1.8110	0 56 50.1	13.473
23	11 21 12.54	1.8273	N. 9 19 26.6	12.480	23	12 47 59.10	1.8122	S. 1 10 18.6	13.476
	FRIDAY 14.					SUNDAY 16.			
0	11 23 2.12	1.8256	N. 9 6 56.6	12.518	0	12 49 47.86	1.8134	S. 1 23 47.2	13.479
1	11 24 51.61	1.8239	8 54 24.3	12.556	1	12 51 36.70	1.8148	1 37 16.0	13.481
2	11 26 41.00	1.8223	8 41 49.8	12.592	2	12 53 25.63	1.8163	1 50 44.9	13.482
3	11 28 30.28	1.8207	8 29 13.2	12.628	3	12 55 14.66	1.8178	2 4 13.9	13.483
4	11 30 19.47	1.8192	8 16 34.4	12.663	4	12 57 3.78	1.8194	2 17 42.9	13.482
5	11 32 8.58	1.8178	8 3 53.5	12.698	5	12 58 52.98	1.8209	2 31 11.8	13.481
6	11 33 57.62	1.8165	7 51 10.6	12.731	6	13 0 42.27	1.8225	2 44 40.6	13.479
7	11 35 46.57	1.8151	7 38 25.7	12.764	7	13 2 31.67	1.8243	2 58 9.3	13.476
8	11 37 35.44	1.8138	7 25 38.9	12.796	8	13 4 21.19	1.8262	3 11 37.7	13.473
9	11 39 24.23	1.8126	7 12 50.1	12.828	9	13 6 10.82	1.8281	3 25 5.9	13.468
10	11 41 12.95	1.8115	6 59 59.5	12.858	10	13 8 0.57	1.8301	3 38 33.8	13.463
11	11 43 1.61	1.8104	6 47 7.1	12.888	11	13 9 50.44	1.8322	3 52 1.4	13.457
12	11 44 50.20	1.8093	6 34 12.9	12.917	12	13 11 40.41	1.8343	4 5 28.6	13.451
13	11 46 38.73	1.8083	6 21 17.0	12.946	13	13 13 30.52	1.8365	4 18 55.4	13.443
14	11 48 27.21	1.8074	6 8 19.4	12.974	14	13 15 20.77	1.8388	4 32 21.7	13.435
15	11 50 15.63	1.8066	5 55 20.1	13.001	15	13 17 11.17	1.8111	4 45 47.5	13.425
16	11 52 4.00	1.8058	5 42 19.3	13.027	16	13 19 1.71	1.8434	4 59 12.7	13.415
17	11 53 52.32	1.8051	5 29 16.9	13.052	17	13 20 52.38	1.8458	5 12 37.3	13.405
18	11 55 40.60	1.8044	5 16 13.0	13.077	18	13 22 43.20	1.8483	5 26 1.3	13.393
19	11 57 28.84	1.8038	5 3 7.6	13.101	19	13 24 34.17	1.8510	5 39 24.6	13.381
20	11 59 17.05	1.8032	4 50 0.8	13.124	20	13 26 25.31	1.8537	5 52 47.1	13.367
21	12 1 5.23	1.8027	4 36 52.7	13.146	21	13 28 16.63	1.8565	6 6 8.7	13.353
22	12 2 53.38	1.8023	4 23 43.2	13.168	22	13 30 8.11	1.8594	6 19 29.5	13.338
23	12 4 41.50	1.8019	4 10 32.4	13.189	23	13 31 59.76	1.8623	6 32 49.4	13.323
24	12 6 29.60	1.8016	N. 3 57 20.4	13.210	24	13 33 51.57	1.8652	S. 6 46 8.4	13.306

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 33 51.57	1.8652	S. 6 46 8.4	13.306
1	13 35 43.57	1.8683	6 59 26.3	13.289
2	13 37 35.76	1.8714	7 12 43.1	13.271
3	13 39 28.15	1.8747	7 25 58.8	13.252
4	13 41 20.73	1.8780	7 39 13.3	13.232
5	13 43 13.51	1.8813	7 52 26.6	13.212
6	13 45 6.48	1.8847	8 5 38.7	13.190
7	13 46 59.66	1.8882	8 18 49.4	13.167
8	13 48 53.06	1.8918	8 31 58.7	13.143
9	13 50 46.68	1.8955	8 45 6.6	13.119
10	13 52 40.52	1.8992	8 58 13.0	13.093
11	13 54 34.59	1.9030	9 11 17.8	13.066
12	13 56 28.88	1.9068	9 24 20.9	13.039
13	13 58 23.40	1.9108	9 37 22.4	13.011
14	14 0 18.17	1.9149	9 50 22.2	12.982
15	14 2 13.19	1.9190	10 3 20.3	12.953
16	14 4 8.45	1.9232	10 16 16.6	12.922
17	14 6 3.97	1.9274	10 29 10.9	12.889
18	14 7 59.74	1.9317	10 42 3.3	12.856
19	14 9 55.77	1.9361	10 54 53.7	12.823
20	14 11 52.07	1.9406	11 7 42.0	12.788
21	14 13 48.64	1.9452	11 20 28.2	12.752
22	14 15 45.48	1.9498	11 33 12.2	12.714
23	14 17 42.60	1.9545	S. 11 45 53.9	12.676

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 19 40.01	1.9592	S. 11 58 33.3	12.637
1	14 21 37.71	1.9640	12 11 10.3	12.597
2	14 23 35.69	1.9688	12 23 44.9	12.556
3	14 25 33.97	1.9738	12 36 17.1	12.515
4	14 27 32.55	1.9789	12 48 46.7	12.472
5	14 29 31.44	1.9841	13 1 13.6	12.427
6	14 31 30.65	1.9894	13 13 37.9	12.382
7	14 33 30.17	1.9946	13 25 59.4	12.335
8	14 35 30.00	1.9999	13 38 18.1	12.287
9	14 37 30.15	2.0053	13 50 33.9	12.238
10	14 39 30.63	2.0106	14 2 46.7	12.189
11	14 41 31.45	2.0164	14 14 56.5	12.138
12	14 43 32.60	2.0221	14 27 3.3	12.086
13	14 45 34.09	2.0278	14 39 6.9	12.033
14	14 47 35.92	2.0335	14 51 7.2	11.979
15	14 49 38.10	2.0393	15 3 4.3	11.923
16	14 51 40.63	2.0452	15 14 58.0	11.867
17	14 53 43.52	2.0511	15 26 48.3	11.809
18	14 55 46.76	2.0571	15 38 35.1	11.750
19	14 57 50.37	2.0632	15 50 18.3	11.689
20	14 59 54.35	2.0694	16 1 57.8	11.628
21	15 1 58.70	2.0756	16 13 33.6	11.565
22	15 4 3.42	2.0819	16 25 5.6	11.501
23	15 6 8.52	2.0883	16 36 33.7	11.436
24	15 8 14.00	2.0947	S. 16 47 57.9	11.370

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 8 14.00	2.0947	S. 16 47 57.9	11.370
1	15 10 19.87	2.1011	16 59 18.0	11.302
2	15 12 26.13	2.1076	17 10 34.1	11.233
3	15 14 32.78	2.1142	17 21 46.0	11.163
4	15 16 39.83	2.1208	17 32 53.6	11.091
5	15 18 47.28	2.1275	17 43 56.8	11.018
6	15 20 55.13	2.1342	17 54 55.7	10.944
7	15 23 3.39	2.1410	18 5 50.1	10.868
8	15 25 12.06	2.1479	18 16 39.8	10.791
9	15 27 21.14	2.1548	18 27 24.9	10.713
10	15 29 30.63	2.1617	18 38 5.3	10.633
11	15 31 40.55	2.1688	18 48 40.8	10.552
12	15 33 50.89	2.1759	18 59 11.5	10.470
13	15 36 1.65	2.1830	19 9 37.2	10.386
14	15 38 12.84	2.1902	19 19 57.8	10.300
15	15 40 24.47	2.1974	19 30 13.2	10.213
16	15 42 36.53	2.2046	19 40 23.4	10.125
17	15 44 49.02	2.2118	19 50 28.2	10.036
18	15 47 1.93	2.2190	20 0 27.7	9.945
19	15 49 15.28	2.2264	20 10 21.7	9.853
20	15 51 29.09	2.2338	20 20 10.0	9.759
21	15 53 43.35	2.2412	20 29 52.7	9.663
22	15 55 58.05	2.2487	20 39 29.6	9.566
23	15 58 13.19	2.2562	S. 20 49 0.6	9.468

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 0 28.77	2.2637	S. 20 58 25.7	9.368
1	16 2 44.81	2.2712	21 7 44.8	9.266
2	16 5 1.30	2.2787	21 16 57.7	9.163
3	16 7 18.25	2.2862	21 26 4.3	9.058
4	16 9 35.65	2.2938	21 35 4.6	8.953
5	16 11 53.50	2.3014	21 43 58.6	8.846
6	16 14 11.81	2.3090	21 52 46.2	8.737
7	16 16 30.58	2.3166	22 1 27.2	8.626
8	16 18 49.81	2.3243	22 10 1.4	8.514
9	16 21 9.49	2.3319	22 18 28.8	8.400
10	16 23 29.63	2.3395	22 26 49.4	8.285
11	16 25 50.23	2.3472	22 35 3.0	8.169
12	16 28 11.29	2.3548	22 43 9.7	8.051
13	16 30 32.81	2.3625	22 51 9.3	7.932
14	16 32 54.79	2.3701	22 59 1.6	7.810
15	16 35 17.22	2.3777	23 6 46.4	7.686
16	16 37 40.11	2.3853	23 14 23.9	7.561
17	16 40 3.46	2.3929	23 21 53.9	7.436
18	16 42 27.27	2.4005	23 29 16.3	7.309
19	16 44 51.53	2.4080	23 36 31.0	7.180
20	16 47 16.24	2.4155	23 43 37.9	7.049
21	16 49 41.40	2.4230	23 50 36.8	6.916
22	16 52 7.01	2.4305	23 57 27.8	6.782
23	16 54 33.07	2.4380	24 4 10.7	6.647
24	16 56 59.57	2.4454	S. 24 10 45.5	6.510

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 56 59.57	2.4454	S.24 10 45.5	6.510
1	16 59 26.52	2.4528	24 17 12.0	6.371
2	17 1 53.91	2.4601	24 23 30.1	6.230
3	17 4 21.74	2.4674	24 29 39.7	6.089
4	17 6 50.00	2.4746	24 35 40.8	5.946
5	17 9 18.69	2.4818	24 41 33.3	5.802
6	17 11 47.82	2.4890	24 47 17.1	5.656
7	17 14 17.37	2.4960	24 52 52.0	5.508
8	17 16 47.34	2.5029	24 58 18.0	5.359
9	17 19 17.73	2.5098	25 3 35.1	5.209
10	17 21 48.53	2.5167	25 8 43.1	5.057
11	17 24 19.75	2.5235	25 13 41.9	4.903
12	17 26 51.37	2.5303	25 18 31.4	4.747
13	17 29 23.39	2.5369	25 23 11.6	4.591
14	17 31 55.81	2.5435	25 27 42.3	4.434
15	17 34 28.62	2.5500	25 32 3.6	4.275
16	17 37 1.81	2.5564	25 36 15.3	4.114
17	17 39 35.38	2.5626	25 40 17.2	3.951
18	17 42 9.34	2.5688	25 44 9.3	3.787
19	17 44 43.67	2.5749	25 47 51.6	3.623
20	17 47 18.35	2.5809	25 51 24.0	3.457
21	17 49 53.37	2.5868	25 54 46.5	3.290
22	17 52 28.75	2.5926	25 57 58.9	3.121
23	17 55 4.48	2.5983	S.26 1 1.0	2.950

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 57 40.56	2.6039	S.26 3 52.9	2.779
1	18 0 16.96	2.6093	26 6 34.5	2.607
2	18 2 53.68	2.6146	26 9 5.7	2.434
3	18 5 30.72	2.6198	26 11 26.6	2.260
4	18 8 8.06	2.6248	26 13 37.0	2.084
5	18 10 45.70	2.6296	26 15 36.7	1.907
6	18 13 23.63	2.6346	26 17 25.8	1.729
7	18 16 1.85	2.6393	26 19 4.2	1.550
8	18 18 40.35	2.6438	26 20 31.8	1.370
9	18 21 19.11	2.6482	26 21 48.6	1.190
10	18 23 58.13	2.6524	26 22 54.6	1.008
11	18 26 37.40	2.6364	26 23 49.6	0.824
12	18 29 16.90	2.6604	26 24 33.5	0.640
13	18 31 56.64	2.6642	26 25 6.4	0.456
14	18 34 36.60	2.6678	26 25 28.2	0.272
15	18 37 16.78	2.6713	26 25 39.0	−0.086
16	18 39 57.16	2.6747	26 25 38.6	+0.101
17	18 42 37.74	2.6779	26 25 26.9	0.289
18	18 45 18.51	2.6809	26 25 3.9	0.477
19	18 47 59.45	2.6837	26 24 29.7	0.665
20	18 50 40.55	2.6864	26 23 44.1	0.854
21	18 53 21.81	2.6889	26 22 47.2	1.043
22	18 56 3.22	2.6913	26 21 38.9	1.234
23	18 58 44.77	2.6935	26 20 19.1	1.425
24	19 1 26.45	2.6955	S.26 18 47.9	1.616

SUNDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 1 26.45	2.6955	S.26 18 47.9	1.616
1	19 4 8.24	2.6974	26 17 5.2	1.807
2	19 6 50.13	2.6991	26 15 11.0	1.998
3	19 9 32.12	2.7006	26 13 5.4	2.189
4	19 12 14.21	2.7019	26 10 48.3	2.382
5	19 14 56.37	2.7031	26 8 19.6	2.576
6	19 17 38.60	2.7041	26 5 39.2	2.769
7	19 20 20.88	2.7050	26 2 47.4	2.961
8	19 23 3.20	2.7057	25 59 43.9	3.153
9	19 25 45.56	2.7062	25 56 29.0	3.345
10	19 28 27.95	2.7066	25 53 2.5	3.538
11	19 31 10.36	2.7068	25 49 24.5	3.730
12	19 33 52.77	2.7068	25 45 34.9	3.923
13	19 36 35.17	2.7066	25 41 33.7	4.115
14	19 39 17.55	2.7062	25 37 21.0	4.307
15	19 41 59.91	2.7058	25 32 56.9	4.498
16	19 44 42.24	2.7052	25 28 21.3	4.690
17	19 47 24.53	2.7044	25 23 34.2	4.881
18	19 50 6.76	2.7034	25 18 35.6	5.071
19	19 52 48.92	2.7022	25 13 25.6	5.261
20	19 55 31.01	2.7008	25 8 4.3	5.450
21	19 58 13.02	2.6993	25 2 31.6	5.639
22	20 0 54.93	2.6977	24 56 47.6	5.828
23	20 3 36.74	2.6959	S.24 50 52.3	6.016

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 6 18.44	2.6940	S.24 44 45.7	6.203
1	20 9 0.02	2.6919	24 38 27.9	6.389
2	20 11 41.47	2.6897	24 31 59.0	6.574
3	20 14 22.78	2.6873	24 25 19.0	6.758
4	20 17 3.94	2.6848	24 18 27.9	6.942
5	20 19 44.95	2.6822	24 11 25.9	7.125
6	20 22 25.80	2.6794	24 4 12.9	7.307
7	20 25 6.48	2.6765	23 56 49.0	7.488
8	20 27 46.98	2.6734	23 49 14.3	7.668
9	20 30 27.29	2.6702	23 41 28.8	7.847
10	20 33 7.40	2.6668	23 33 32.6	8.025
11	20 35 47.31	2.6634	23 25 25.8	8.202
12	20 38 27.01	2.6599	23 17 8.4	8.377
13	20 41 6.49	2.6562	23 8 40.5	8.551
14	20 43 45.75	2.6524	23 0 2.3	8.723
15	20 46 24.78	2.6485	22 51 13.7	8.895
16	20 49 3.57	2.6445	22 42 14.8	9.065
17	20 51 42.12	2.6404	22 33 5.8	9.234
18	20 54 20.42	2.6361	22 23 46.7	9.401
19	20 56 58.46	2.6318	22 14 17.6	9.567
20	20 59 36.24	2.6274	22 4 38.6	9.731
21	21 2 13.75	2.6229	21 54 49.8	9.894
22	21 4 50.99	2.6184	21 44 51.3	10.055
23	21 7 27.96	2.6138	21 34 43.1	10.215
24	21 10 4.64	2.6090	S.21 24 25.4	10.373

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 25.					THURSDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 10 4.64	2.6090	S. 21 24 25.4	10.373	0	23 9 4.14	2.3477	S. 10 40 21.8	15.667
1	21 12 41.03	2.6041	21 13 58.3	10.530	1	23 11 24.85	2.3427	10 24 40.0	15.725
2	21 15 17.13	2.5992	21 3 21.8	10.685	2	23 13 45.26	2.3377	10 8 54.8	15.781
3	21 17 52.93	2.5942	20 52 36.1	10.838	3	23 16 5.37	2.3328	9 53 6.3	15.835
4	21 20 28.43	2.5892	20 41 41.3	10.989	4	23 18 25.19	2.3280	9 37 14.6	15.887
5	21 23 3.63	2.5841	20 30 37.4	11.139	5	23 20 44.72	2.3232	9 21 19.9	15.937
6	21 25 38.52	2.5789	20 19 24.5	11.287	6	23 23 3.97	2.3184	9 5 22.2	15.984
7	21 28 13.10	2.5737	20 8 2.8	11.432	7	23 25 22.93	2.3137	8 49 21.7	16.029
8	21 30 47.36	2.5684	19 56 32.5	11.577	8	23 27 41.61	2.3090	8 33 18.6	16.072
9	21 33 21.31	2.5631	19 44 53.6	11.719	9	23 30 0.01	2.3044	8 17 13.0	16.113
10	21 35 54.93	2.5577	19 33 6.2	11.859	10	23 32 18.14	2.2998	8 1 5.0	16.153
11	21 38 28.23	2.5523	19 21 10.4	11.998	11	23 34 35.99	2.2954	7 44 54.6	16.191
12	21 41 1.20	2.5468	19 9 6.4	12.135	12	23 36 53.58	2.2910	7 28 42.0	16.226
13	21 43 33.84	2.5413	18 56 54.2	12.270	13	23 39 10.91	2.2867	7 12 27.4	16.259
14	21 46 6.15	2.5358	18 44 34.0	12.403	14	23 41 27.98	2.2824	6 56 11.0	16.290
15	21 48 38.13	2.5302	18 32 5.9	12.534	15	23 43 44.80	2.2782	6 39 52.7	16.319
16	21 51 9.77	2.5246	18 19 30.0	12.662	16	23 46 1.37	2.2741	6 23 32.7	16.345
17	21 53 41.08	2.5190	18 6 46.5	12.788	17	23 48 17.69	2.2700	6 7 11.2	16.369
18	21 56 12.05	2.5134	17 53 55.4	12.913	18	23 50 33.77	2.2660	5 50 48.3	16.391
19	21 58 42.69	2.5078	17 40 56.9	13.036	19	23 52 49.61	2.2621	5 34 24.1	16.412
20	22 1 12.98	2.5021	17 27 51.1	13.156	20	23 55 5.22	2.2582	5 17 58.7	16.432
21	22 3 42.93	2.4963	17 14 38.1	13.275	21	23 57 20.60	2.2545	5 1 32.1	16.450
22	22 6 12.54	2.4906	17 1 18.1	13.392	22	23 59 35.76	2.2508	4 45 4.6	16.465
23	22 8 41.80	2.4849	S. 16 47 51.1	13.506	23	0 1 50.70	2.2471	S. 4 28 36.3	16.478
	WEDNESDAY 26.					FRIDAY 28.			
0	22 11 10.72	2.4792	S. 16 34 17.3	13.618	0	0 4 5.41	2.2435	S. 4 12 7.3	16.489
1	22 13 39.30	2.4734	16 20 36.9	13.728	1	0 6 19.91	2.2400	3 55 37.7	16.498
2	22 16 7.54	2.4677	16 6 49.9	13.836	2	0 8 34.21	2.2365	3 39 7.6	16.506
3	22 18 35.43	2.4620	15 52 56.5	13.942	3	0 10 48.30	2.2332	3 22 37.0	16.512
4	22 21 2.98	2.4564	15 38 56.8	14.046	4	0 13 2.19	2.2299	3 6 6.2	16.515
5	22 23 30.19	2.4507	15 24 51.0	14.148	5	0 15 15.89	2.2267	2 49 35.3	16.515
6	22 25 57.07	2.4451	15 10 39.1	14.247	6	0 17 29.39	2.2236	2 33 4.4	16.514
7	22 28 23.60	2.4394	14 56 21.3	14.344	7	0 19 42.71	2.2205	2 16 33.6	16.513
8	22 30 49.79	2.4338	14 41 57.8	14.439	8	0 21 55.85	2.2174	2 0 2.9	16.510
9	22 33 15.65	2.4282	14 27 28.6	14.532	9	0 24 8.80	2.2145	1 43 32.4	16.505
10	22 35 41.17	2.4226	14 12 53.9	14.623	10	0 26 21.58	2.2116	1 27 2.3	16.497
11	22 38 6.36	2.4170	13 58 13.8	14.712	11	0 28 34.19	2.2088	1 10 32.8	16.487
12	22 40 31.21	2.4115	13 43 28.4	14.798	12	0 30 46.64	2.2061	0 54 3.9	16.476
13	22 42 55.73	2.4060	13 28 37.9	14.883	13	0 32 58.93	2.2035	0 37 35.7	16.463
14	22 45 19.92	2.4005	13 13 42.4	14.965	14	0 35 11.06	2.2010	0 21 8.3	16.448
15	22 47 43.78	2.3950	12 58 42.1	15.045	15	0 37 23.04	2.1985	S. 0 4 41.9	16.432
16	22 50 7.32	2.3896	12 43 37.1	15.123	16	0 39 34.87	2.1961	N. 0 11 43.5	16.413
17	22 52 30.53	2.3842	12 28 27.4	15.199	17	0 41 46.56	2.1937	0 28 7.7	16.393
18	22 54 53.42	2.3789	12 13 13.2	15.272	18	0 43 58.12	2.1914	0 44 30.7	16.372
19	22 57 15.99	2.3736	11 57 54.7	15.343	19	0 46 9.54	2.1892	1 0 52.4	16.350
20	22 59 38.24	2.3683	11 42 32.0	15.411	20	0 48 20.83	2.1871	1 17 12.7	16.325
21	23 2 0.18	2.3631	11 27 5.3	15.478	21	0 50 31.99	2.1851	1 33 31.4	16.298
22	23 4 21.81	2.3579	11 11 34.6	15.543	22	0 52 43.03	2.1831	1 49 48.5	16.269
23	23 6 43.13	2.3528	10 56 0.1	15.607	23	0 54 53.96	2.1811	2 6 3.8	16.240
24	23 9 4.14	2.3477	S. 10 40 21.8	15.667	24	0 57 4.77	2.1792	N. 2 22 17.3	16.209

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	3	22	5.8
○ Full Moon, ...	11	23	33.2
☾ Last Quarter, ...	19	23	23.5
● New Moon, ...	26	15	22.5

	d	h
☾ Apogee, ...	11	15.6
☾ Perigee, ...	26	2.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	53° 2′ 59″	2575	54° 42′ 28″	2593	56° 21′ 33″	2610	58° 0′ 14″	2629
	α Arietis	E.	33 11 36	2589	31 32 26	2644	29 54 31	2707	28 18 0	2778
	Aldebaran	E.	62 4 47	2266	60 17 57	2283	58 31 33	2302	56 45 36	2321
	Pollux	E.	106 6 22	2238	104 18 51	2256	102 31 46	2272	100 45 6	2289
2	Sun	W.	66 7 25	2722	67 43 36	2741	69 19 21	2760	70 54 42	2779
	α Pegasi	W.	35 47 7	3766	37 2 45	3675	38 19 59	3597	39 38 36	3531
	Aldebaran	E.	48 2 54	2420	46 19 48	2441	44 37 12	2462	42 55 5	2484
	Pollux	E.	91 58 11	2378	90 14 5	2396	88 30 25	2414	86 47 11	2433
3	Sun	W.	78 45 9	2874	80 18 1	2893	81 50 29	2912	83 22 33	2930
	α Pegasi	W.	46 26 46	3323	47 50 31	3299	49 14 44	3278	50 39 21	3262
	Venus	W.	33 21 19	2935	34 52 54	2950	36 24 10	2965	37 55 6	2982
	Aldebaran	E.	34 32 16	2599	32 53 19	2624	31 14 57	2650	29 37 10	2678
	Pollux	E.	78 17 24	2522	76 36 41	2540	74 56 23	2556	73 16 28	2574
	Jupiter	E.	114 30 8	2488	112 48 38	2504	111 7 31	2522	109 26 48	2538
	Regulus	E.	114 31 36	2533	112 51 9	2550	111 11 5	2567	109 31 25	2584
4	Sun	W.	90 57 10	3019	92 26 59	3036	93 56 27	3053	95 25 34	3070
	α Pegasi	W.	57 46 16	3216	59 12 6	3214	60 37 59	3212	62 3 54	3211
	Venus	W.	45 24 40	3063	46 53 35	3079	48 22 10	3095	49 50 26	3110
	Pollux	E.	65 2 41	2657	63 25 3	2672	61 47 46	2688	60 10 50	2704
	Jupiter	E.	101 8 54	2619	99 30 25	2634	97 52 16	2649	96 14 28	2664
	Regulus	E.	101 18 44	2665	99 41 17	2681	98 4 11	2696	96 27 26	2711
5	Sun	W.	102 46 11	3148	104 13 22	3163	105 40 16	3178	107 6 52	3192
	α Pegasi	W.	69 13 14	3224	70 38 55	3228	72 4 31	3233	73 30 1	3238
	Venus	W.	57 7 12	3184	58 33 40	3198	59 59 52	3211	61 25 48	3225
	α Arietis	W.	25 37 39	3309	27 1 41	3266	28 26 32	3232	29 52 3	3205
	Pollux	E.	52 11 12	2777	50 36 14	2790	49 1 33	2804	47 27 10	2817
	Jupiter	E.	88 10 22	2735	86 34 29	2748	84 58 53	2761	83 23 34	2773
	Regulus	E.	88 28 33	2782	86 53 42	2796	85 19 9	2809	83 44 53	2821
6	Sun	W.	114 15 48	3257	115 40 50	3270	117 5 37	3282	118 30 10	3293
	α Pegasi	W.	80 35 44	3272	82 0 28	3280	83 25 3	3288	84 49 29	3295
	Venus	W.	68 31 38	3286	69 56 6	3298	71 20 20	3308	72 44 22	3319
	α Arietis	W.	37 5 53	3132	38 33 24	3125	40 1 3	3119	41 28 49	3116
	Pollux	E.	39 39 25	2879	38 6 39	2891	36 34 8	2902	35 1 52	2913
	Jupiter	E.	75 30 58	2832	73 57 12	2842	72 23 39	2853	70 50 20	2863
	Regulus	E.	75 57 32	2881	74 24 49	2892	72 52 20	2902	71 20 4	2913
7	Sun	W.	125 29 44	3345	126 53 3	3356	128 16 10	3365	129 39 7	3374
	α Pegasi	W.	91 49 14	3338	93 12 41	3348	94 35 57	3358	95 59 2	3367
	Venus	W.	79 41 33	3367	81 4 27	3376	82 27 11	3384	83 49 46	3393
	α Arietis	W.	48 48 20	3111	50 16 16	3112	51 44 11	3113	53 12 5	3114
	Aldebaran	W.	17 59 36	3198	19 25 48	3171	20 52 32	3154	22 19 40	3134
	Jupiter	E.	63 6 52	2909	61 34 45	2917	60 2 48	2926	58 31 2	2933
	Regulus	E.	63 41 55	2960	62 10 52	2969	60 40 0	2977	59 9 18	2985
8	Venus	W.	90 40 30	3427	92 2 16	3433	93 23 55	3439	94 45 27	3445
	α Arietis	W.	60 31 4	3124	61 58 44	3126	63 26 22	3129	64 53 57	3131
	Aldebaran	W.	29 38 50	3098	31 7 2	3096	32 35 17	3094	34 3 34	3093
	Jupiter	E.	50 54 30	2968	49 23 37	2975	47 52 53	2981	46 22 17	2987
	Regulus	E.	51 38 15	3022	50 8 29	3028	48 38 51	3035	47 9 22	3041
	Spica	E.	105 41 11	3018	104 11 20	3023	102 41 36	3028	101 11 58	3033

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	59° 38′ 30″	2646	61° 16′ 22″	2666	62° 53′ 48″	2684	64° 30′ 49″	2703
	α Arietis	E.	26 43 3	2860	25 9 53	2957	23 38 46	3070	22 10 0	3207
	Aldebaran	E.	55 0 7	2340	53 15 6	2359	51 30 33	2380	49 46 29	2400
	Pollux	E.	98 58 51	2307	97 13 2	2325	95 27 39	2343	93 42 42	2361
2	Sun	W.	72 29 37	2798	74 4 7	2818	75 38 12	2836	77 11 53	2855
	α Pegasi	W.	40 58 26	3475	42 19 18	3428	43 41 3	3386	45 3 35	3352
	Aldebaran	E.	41 13 29	2505	39 32 23	2528	37 51 48	2551	36 11 46	2574
	Pollux	E.	85 4 23	2450	83 22 0	2469	81 40 3	2487	79 58 31	2504
3	Sun	W.	84 54 14	2948	86 25 32	2966	87 56 27	2984	89 27 0	3002
	α Pegasi	W.	52 4 17	3247	53 29 30	3236	54 54 56	3228	56 20 32	3221
	Venus	W.	39 25 41	2993	40 55 56	3014	42 25 51	3030	43 55 26	3047
	Aldebaran	E.	28 0 0	2707	26 23 30	2739	24 47 42	2775	23 12 41	2812
	Pollux	E.	71 36 57	2591	69 57 49	2607	68 19 4	2624	66 40 41	2640
	Jupiter	E.	107 46 28	2555	106 6 31	2571	104 26 56	2588	102 47 44	2604
	Regulus	E.	107 52 8	2601	106 13 14	2617	104 34 42	2633	102 56 32	2649
4	Sun	W.	96 54 20	3086	98 22 47	3102	99 50 54	3118	101 18 42	3133
	α Pegasi	W.	63 29 50	3212	64 55 45	3214	66 21 38	3216	67 47 28	3220
	Venus	W.	51 18 24	3125	52 46 3	3140	54 13 24	3155	55 40 27	3170
	Pollux	E.	58 34 15	2719	56 58 0	2734	55 22 5	2748	53 46 29	2763
	Jupiter	E.	94 37 0	2679	92 59 52	2693	91 23 3	2707	89 46 33	2722
	Regulus	E.	94 51 1	2725	93 14 55	2741	91 39 9	2755	90 3 42	2769
5	Sun	W.	108 33 11	3205	109 59 14	3219	111 25 1	3232	112 50 32	3245
	α Pegasi	W.	74 55 25	3241	76 20 42	3251	77 45 51	3258	79 10 52	3265
	Venus	W.	62 51 28	3238	64 16 52	3251	65 42 1	3263	67 6 56	3274
	α Arietis	W.	31 18 6	3183	32 44 35	3166	34 11 25	3152	35 38 32	3140
	Pollux	E.	45 53 4	2830	44 19 15	2843	42 45 43	2855	41 12 26	2867
	Jupiter	E.	81 48 31	2785	80 13 44	2798	78 39 13	2810	77 4 58	2821
	Regulus	E.	82 10 53	2835	80 37 10	2846	79 3 42	2859	77 30 30	2869
6	Sun	W.	119 54 30	3304	121 18 37	3314	122 42 32	3325	124 6 14	3336
	α Pegasi	W.	86 13 46	3304	87 37 53	3313	89 1 50	3321	90 25 37	3330
	Venus	W.	74 8 11	3330	75 31 48	3339	76 55 14	3349	78 18 29	3358
	α Arietis	W.	42 56 39	3114	44 24 32	3112	45 52 27	3111	47 20 23	3110
	Pollux	E.	33 29 50	2921	31 58 2	2935	30 26 28	2946	28 55 7	2957
	Jupiter	E.	69 17 14	2873	67 44 21	2883	66 11 40	2891	64 39 10	2901
	Regulus	E.	69 48 2	2923	68 16 12	2933	66 44 35	2942	65 13 9	2951
7	Sun	W.	131 1 53	3383	132 24 29	3392	133 46 55	3400	135 9 11	3409
	α Pegasi	W.	97 21 56	3377	98 44 39	3387	100 7 10	3397	101 29 30	3408
	Venus	W.	85 12 11	3400	86 34 27	3408	87 56 35	3414	89 18 36	3420
	α Arietis	W.	54 39 57	3116	56 7 47	3118	57 35 35	3119	59 3 21	3123
	Aldebaran	W.	23 47 8	3123	25 14 50	3114	26 42 42	3107	28 10 43	3102
	Jupiter	E.	56 59 25	2941	55 27 58	2948	53 56 40	2955	52 25 31	2962
	Regulus	E.	57 38 47	2993	56 8 25	3001	54 38 13	3008	53 8 10	3014
8	Venus	W.	96 6 53	3450	97 28 13	3454	98 49 28	3460	100 10 37	3464
	α Arietis	W.	66 21 29	3133	67 48 58	3135	69 16 25	3138	70 43 49	3139
	Aldebaran	W.	35 31 52	3092	37 0 11	3092	38 28 30	3092	39 56 49	3092
	Jupiter	E.	44 51 48	2993	43 21 26	2999	41 51 12	3004	40 21 4	3009
	Regulus	E.	45 40 0	3047	44 10 46	3054	42 41 40	3060	41 12 41	3065
	Spica	E.	99 42 26	3038	98 13 0	3042	96 43 39	3047	95 14 24	3051

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L of Diff.
9	Venus	W.	101° 31′ 41″	3468	102° 52′ 41″	3472	104° 13′ 36″	3476	105° 34′ 27″	3480
	α Arietis	W.	72 11 11	3142	73 38 30	3143	75 5 47	3145	76 33 2	3148
	Aldebaran	W.	41 25 8	3093	42 53 26	3093	44 21 44	3094	45 50 1	3096
	Jupiter	E.	38 51 3	3015	37 21 9	3020	35 51 21	3026	34 21 40	3031
	Regulus	E.	39 43 49	3072	38 15 5	3078	36 46 28	3083	35 17 58	3090
	Spica	E.	93 45 14	3054	92 16 8	3058	90 47 7	3061	89 18 10	3065
	Mars	E.	108 32 30	3166	107 5 42	3171	105 38 58	3174	104 12 18	3177
10	α Arietis	W.	83 48 41	3156	85 15 43	3158	86 42 43	3159	88 9 41	3160
	Aldebaran	W.	53 11 9	3099	54 39 20	3099	56 7 31	3100	57 35 41	3101
	Spica	E.	81 54 19	3078	80 25 42	3079	78 57 7	3082	77 28 35	3083
	Mars	E.	96 59 46	3189	95 33 24	3191	94 7 4	3193	92 40 46	3193
11	α Arietis	W.	95 24 9	3167	96 50 58	3168	98 17 46	3168	99 44 33	3169
	Aldebaran	W.	64 56 24	3101	66 24 32	3101	67 52 41	3101	69 20 50	3101
	Pollux	W.	20 44 51	3108	22 12 51	3104	23 40 56	3101	25 9 5	3098
	Spica	E.	70 6 23	3090	68 38 1	3091	67 9 41	3091	65 41 21	3092
	Mars	E.	85 29 34	3198	84 3 22	3198	82 37 10	3198	81 10 59	3198
12	α Arietis	W.	106 58 9	3174	108 24 49	3176	109 51 27	3177	111 18 4	3178
	Aldebaran	W.	76 41 43	3097	78 9 56	3096	79 38 11	3095	81 6 27	3094
	Pollux	W.	32 30 35	3087	33 59 1	3085	35 27 29	3082	36 56 0	3081
	Spica	E.	58 19 52	3094	56 51 35	3094	55 23 18	3094	53 55 1	3094
	Mars	E.	73 59 56	3195	72 33 41	3194	71 7 25	3193	69 41 8	3192
	Antares	E.	104 11 22	3080	102 42 48	3079	101 14 13	3078	99 45 37	3078
13	Aldebaran	W.	88 28 12	3085	89 56 40	3083	91 25 10	3081	92 53 43	3079
	Pollux	W.	44 19 12	3069	45 47 59	3067	47 16 49	3064	48 45 43	3061
	Spica	E.	46 33 32	3092	45 5 13	3092	43 36 54	3091	42 8 34	3091
	Mars	E.	62 29 12	3183	61 2 42	3180	59 36 9	3177	58 9 32	3174
	Antares	E.	92 22 12	3069	90 53 25	3067	89 24 35	3065	87 55 43	3062
14	Aldebaran	W.	100 17 12	3065	101 46 4	3062	103 15 0	3059	104 44 0	3055
	Pollux	W.	56 11 5	3045	57 40 22	3042	59 9 43	3038	60 39 9	3034
	Jupiter	W.	21 35 36	3056	23 4 39	3047	24 33 54	3037	26 3 21	3028
	Regulus	W.	20 16 52	3147	21 44 5	3129	23 11 39	3115	24 39 30	3102
	Spica	E.	34 46 54	3092	33 18 35	3093	31 50 17	3095	30 22 1	3096
	Mars	E.	50 55 37	3158	49 28 38	3154	48 1 34	3150	46 34 25	3146
	Antares	E.	80 30 31	3048	79 1 18	3044	77 32 0	3041	76 2 38	3038
15	Aldebaran	W.	112 10 9	3035	113 39 38	3031	115 9 12	3026	116 38 52	3022
	Pollux	W.	68 7 40	3010	69 37 40	3005	71 7 47	2999	72 38 1	2993
	Jupiter	W.	33 33 17	2988	35 3 45	2980	36 34 23	2973	38 5 10	2965
	Regulus	W.	32 2 17	3052	33 31 26	3043	35 0 46	3034	36 30 16	3025
	Mars	E.	39 17 18	3121	37 49 34	3116	36 21 44	3110	34 53 46	3104
	Antares	E.	68 34 34	3015	67 4 40	3010	65 34 40	3005	64 4 34	3000
	α Aquilæ	E.	113 31 32	3981	112 19 34	3955	111 7 10	3930	109 54 21	3907
16	Pollux	W.	80 11 4	2961	81 42 6	2954	83 13 17	2946	84 44 37	2939
	Jupiter	W.	45 41 24	2927	47 13 8	2920	48 45 2	2912	50 17 6	2903
	Regulus	W.	44 0 23	2964	45 30 56	2975	47 1 40	2967	48 32 34	2958
	Antares	E.	56 32 16	2969	55 1 25	2963	53 30 26	2956	51 59 18	2949
	α Aquilæ	E.	103 44 43	3807	102 29 48	3790	101 14 35	3774	99 59 6	3758
	Saturn	E.	105 30 13	3008	104 0 10	3000	102 29 57	2993	100 59 35	2984
	Sun	E.	135 49 30	3367	134 26 36	3358	133 3 32	3349	131 40 17	3335

GREENWICH MEAN TIME.

LUNAR DISTANCES.

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9	Venus	W.	106° 55′ 14″	3483	108° 15′ 57″	3486	109° 36′ 37″	3488	110° 57′ 14″	3491
	α Arietis	W.	78 0 14	3149	79 27 24	3151	80 54 32	3153	82 21 37	3154
	Aldebaran	W.	47 18 16	3096	48 46 30	3096	50 14 44	3097	51 42 57	3098
	Jupiter	E.	32 52 6	3037	31 22 39	3043	29 53 19	3049	28 24 7	3055
	Regulus	E.	33 49 36	3096	32 21 22	3103	30 53 16	3110	29 25 18	3118
	Spica	E.	87 49 17	3068	86 20 28	3070	84 51 42	3073	83 22 59	3075
	Mars	E.	102 45 41	3180	101 19 8	3183	99 52 38	3185	98 26 11	3187
10	α Arietis	W.	89 36 38	3162	91 3 33	3163	92 30 26	3164	93 57 18	3165
	Aldebaran	W.	59 3 50	3101	60 31 59	3101	62 0 7	3101	63 28 16	3101
	Spica	E.	76 0 5	3085	74 31 37	3087	73 3 11	3087	71 34 46	3089
	Mars	E.	91 14 29	3195	89 48 14	3196	88 22 0	3197	86 55 47	3197
11	α Arietis	W.	101 11 19	3171	102 38 3	3172	104 4 46	3173	105 31 28	3173
	Aldebaran	W.	70 48 59	3100	72 17 9	3099	73 45 20	3099	75 13 31	3098
	Pollux	W.	26 37 17	3095	27 5 33	3093	29 33 51	3091	31 2 12	3089
	Spica	E.	64 13 2	3093	62 44 44	3093	61 16 26	3094	59 48 9	3094
	Mars	E.	79 44 47	3198	78 18 35	3198	76 52 23	3197	75 26 10	3196
12	α Arietis	W.	112 44 40	3178	114 11 15	3180	115 37 48	3182	117 4 19	3183
	Aldebaran	W.	82 34 44	3092	84 3 3	3091	85 31 24	3089	86 59 47	3087
	Pollux	W.	38 24 33	3078	39 53 9	3077	41 21 47	3074	42 50 28	3072
	Spica	E.	52 26 44	3094	50 58 27	3093	49 30 9	3093	48 1 51	3092
	Mars	E.	68 14 49	3190	66 48 28	3188	65 22 5	3187	63 55 40	3184
	Antares	E.	98 17 0	3076	96 48 21	3074	95 19 40	3073	93 50 57	3071
13	Aldebaran	W.	94 22 18	3077	95 50 56	3073	97 19 38	3071	98 48 23	3068
	Pollux	W.	50 14 40	3058	51 43 41	3056	53 12 45	3052	54 41 53	3049
	Spica	E.	40 40 14	3091	39 11 54	3091	37 43 34	3091	36 15 14	3091
	Mars	E.	56 42 52	3172	55 16 9	3168	53 49 22	3166	52 22 32	3162
	Antares	E.	86 26 47	3060	84 57 48	3057	83 28 46	3054	81 59 40	3052
14	Aldebaran	W.	106 13 5	3052	107 42 14	3048	109 11 27	3044	110 40 45	3039
	Pollux	W.	62 8 40	3030	63 38 16	3025	65 7 58	3020	66 37 46	3015
	Jupiter	W.	27 32 59	3019	29 2 48	3010	30 32 48	3002	32 2 58	2995
	Regulus	W.	26 7 37	3091	27 35 58	3079	29 4 33	3070	30 33 19	3060
	Spica	E.	28 53 47	3099	27 25 36	3103	25 57 30	3108	24 29 30	3115
	Mars	E.	45 7 11	3141	43 39 51	3137	42 12 26	3132	40 44 55	3127
	Antares	E.	74 33 12	3034	73 3 41	3029	71 34 4	3025	70 4 22	3020
15	Aldebaran	W.	118 8 38	3017	119 38 30	3011	121 8 29	3006	122 38 34	3001
	Pollux	W.	74 8 22	2987	75 38 51	2981	77 9 27	2975	78 40 11	2968
	Jupiter	W.	39 36 6	2958	41 7 11	2950	42 38 26	2943	44 9 50	2935
	Regulus	W.	37 59 57	3018	39 29 48	3009	40 59 49	3001	42 30 1	2993
	Mars	E.	33 25 41	3097	31 57 28	3091	30 29 8	3084	29 0 39	3077
	Antares	E.	62 34 21	2994	61 4 1	2989	59 33 34	2982	58 2 59	2976
	α Aquilæ	E.	108 41 8	3885	107 27 33	3863	106 13 36	3844	104 59 19	3825
16	Pollux	W.	86 16 7	2931	87 47 47	2922	89 19 38	2913	90 51 40	2905
	Jupiter	W.	51 49 21	2894	53 21 47	2886	54 54 24	2876	56 27 13	2867
	Regulus	W.	50 3 40	2949	51 34 57	2939	53 6 26	2930	54 38 7	2920
	Antares	E.	50 28 1	2942	48 56 35	2934	47 24 59	2926	45 53 13	2918
	α Aquilæ	E.	98 43 20	3744	97 27 19	3729	96 11 3	3716	94 54 33	3704
	Saturn	E.	99 29 2	2976	97 58 19	2968	96 27 26	2959	94 56 22	2950
	Sun	E.	130 16 50	3329	128 53 12	3319	127 29 22	3308	126 5 20	3297

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Pollux	W.	92° 23′ 53″	2895	93° 56′ 18″	2886	95° 28′ 55″	2876	97° 1′ 45″	2866
	Jupiter	W.	58 0 14	2857	59 33 28	2848	61 6 54	2838	62 40 33	2828
	Regulus	W.	56 10 1	2910	57 42 7	2900	59 14 26	2890	60 46 58	2879
	Antares	E.	44 21 17	2909	42 49 10	2901	41 16 53	2893	39 44 25	2884
	Saturn	E.	93 25 6	2940	91 53 38	2931	90 21 58	2920	88 50 5	2911
	α Aquilæ	E.	93 37 50	3692	92 20 54	3681	91 3 47	3670	89 46 28	3660
	Sun	E.	124 41 5	3287	123 16 38	3276	121 51 58	3261	120 27 4	3253
18	Pollux	W.	104 49 16	2811	106 23 30	2799	107 57 59	2787	109 32 44	2774
	Jupiter	W.	70 32 16	2772	72 7 21	2760	73 42 42	2747	75 18 19	2735
	Regulus	W.	68 33 11	2822	70 7 10	2809	71 41 26	2797	73 15 58	2784
	Antares	E.	31 59 15	2839	30 25 38	2831	28 51 51	2823	27 17 53	2815
	Saturn	E.	81 7 21	2855	79 34 5	2843	78 0 33	2831	76 26 45	2819
	α Aquilæ	E.	83 17 28	3621	81 59 16	3616	80 40 59	3610	79 22 36	3607
	Sun	E.	113 19 3	3190	111 52 42	3176	110 26 4	3163	108 59 10	3146
19	Jupiter	W.	83 20 43	2668	84 58 6	2654	86 35 48	2639	88 13 50	2624
	Regulus	W.	81 12 57	2716	82 49 15	2701	84 25 53	2687	86 2 50	2672
	Spica	W.	27 21 39	2778	28 56 36	2756	30 32 2	2735	32 7 55	2716
	Saturn	E.	68 33 36	2752	66 58 5	2738	65 22 15	2723	63 46 6	2709
	α Aquilæ	E.	72 50 2	3604	71 31 32	3607	70 13 5	3611	68 54 43	3617
	Sun	E.	101 40 20	3074	100 11 39	3059	98 42 39	3043	97 13 19	3026
20	Jupiter	W.	96 29 5	2548	98 9 12	2532	99 49 41	2515	101 30 33	2499
	Regulus	W.	94 12 44	2595	95 51 46	2578	97 31 11	2562	99 10 58	2545
	Spica	W.	40 13 53	2619	41 52 22	2601	43 31 16	2583	45 10 35	2564
	Mars	W.	21 41 25	2676	23 18 37	2659	24 56 12	2641	26 34 11	2624
	Saturn	E.	55 40 25	2633	54 2 15	2618	52 23 44	2602	50 44 52	2586
	α Aquilæ	E.	62 25 11	3678	61 8 1	3697	59 51 11	3721	58 34 46	3747
	Sun	E.	89 41 31	2942	88 10 5	2924	86 38 17	2907	85 6 7	2889
21	Jupiter	W.	110 0 36	2417	111 43 47	2400	113 27 22	2383	115 11 21	2366
	Spica	W.	53 33 34	2472	55 15 27	2453	56 57 46	2435	58 40 31	2417
	Mars	W.	34 50 1	2536	36 30 24	2518	38 11 12	2499	39 52 26	2482
	Saturn	E.	42 25 4	2507	40 44 1	2492	39 2 36	2477	37 20 50	2462
	α Aquilæ	E.	52 21 5	3949	51 8 35	4008	49 57 3	4074	48 46 36	4149
	Sun	E.	77 19 29	2798	75 44 58	2779	74 10 3	2761	72 34 44	2742
22	Spica	W.	67 20 42	2327	69 6 2	2310	70 51 47	2293	72 37 57	2275
	Mars	W.	48 24 55	2392	50 8 41	2374	51 52 53	2357	53 37 30	2339
	Antares	W.	21 32 4	2371	23 16 21	2346	25 1 14	2322	26 46 42	2300
	Saturn	E.	28 46 57	2395	27 3 15	2385	25 19 19	2377	23 35 11	2371
	Sun	E.	64 32 1	2652	62 54 16	2633	61 16 6	2615	59 37 32	2599
23	Spica	W.	81 35 2	2194	83 23 39	2178	85 12 39	2164	87 2 1	2149
	Mars	W.	62 26 47	2256	64 13 51	2241	66 1 18	2226	67 49 7	2210
	Antares	W.	35 41 41	2202	37 30 5	2186	39 18 54	2169	41 8 8	2153
	Sun	E.	51 18 57	2517	49 38 8	2502	47 56 58	2488	46 15 28	2474
24	Mars	W.	76 53 38	2143	78 43 32	2131	80 33 44	2120	82 24 13	2109
	Antares	W.	50 20 5	2083	52 11 31	2070	54 3 16	2059	55 55 19	2048
	Sun	E.	37 43 27	2417	36 0 17	2409	34 16 55	2402	32 33 23	2396
28	Sun	W.	19 41 56	2495	21 23 16	2490	23 4 43	2488	24 46 13	2490
	Aldebaran	E.	68 28 37	2091	66 37 24	2104	64 46 31	2118	62 55 59	2133

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
17	Pollux	W.	98 34 47	2855	100 8 3	2845	101 41 33	2834	103 15 17	2822
	Jupiter	W.	64 14 25	2817	65 48 31	2806	67 22 51	2795	68 57 26	2783
	Regulus	W.	62 19 44	2868	63 52 44	2857	65 25 58	2845	66 59 27	2834
	Antares	E.	38 11 46	2876	36 38 56	2866	35 5 54	2857	33 32 40	2843
	Saturn	E.	87 18 0	2901	85 45 42	2889	84 13 9	2878	82 40 22	2867
	α Aquilæ	E.	88 28 58	3651	87 11 19	3642	85 53 30	3635	84 35 33	3627
	Sun	E.	119 1 57	3241	117 36 35	3228	116 11 0	3216	114 45 9	3202
18	Pollux	W.	111 7 46	2762	112 43 4	2749	114 18 39	2735	115 54 32	2722
	Jupiter	W.	76 54 13	2722	78 30 24	2709	80 6 52	2695	81 43 38	2681
	Regulus	W.	74 50 47	2771	76 25 53	2758	78 1 16	2744	79 36 57	2730
	Antares	E.	25 43 45	2808	24 9 27	2801	22 35 1	2796	21 0 28	2782
	Saturn	E.	74 52 42	2806	73 18 22	2792	71 43 44	2770	70 8 49	2766
	α Aquilæ	E.	78 4 9	3604	76 45 39	3602	75 27 7	3601	74 8 34	3602
	Sun	E.	107 31 59	3134	106 4 31	3120	104 36 46	3105	103 8 42	3090
19	Jupiter	W.	89 52 12	2610	91 30 54	2595	93 9 56	2579	94 49 20	2564
	Regulus	W.	87 40 8	2657	89 17 46	2642	90 55 44	2626	92 34 3	2610
	Spica	W.	33 44 14	2695	35 21 0	2676	36 58 12	2657	38 35 50	2638
	Saturn	E.	62 9 38	2694	60 32 50	2679	58 55 42	2664	57 18 14	2649
	α Aquilæ	E.	67 36 27	3625	66 18 20	3635	65 0 23	3647	63 42 39	3662
	Sun	E.	95 43 39	3009	94 13 38	2993	92 43 17	2976	91 12 34	2960
20	Jupiter	W.	103 11 47	2483	104 53 24	2467	106 35 24	2450	108 17 48	2433
	Regulus	W.	100 51 8	2529	102 31 41	2512	104 12 37	2496	105 53 56	2479
	Spica	W.	46 50 20	2545	48 30 30	2527	50 11 6	2509	51 52 7	2490
	Mars	W.	28 12 33	2607	29 51 19	2589	31 30 29	2572	33 10 3	2554
	Saturn	E.	49 5 38	2570	47 26 2	2554	45 46 4	2539	44 5 45	2523
	α Aquilæ	E.	57 18 49	3778	56 3 24	3813	54 48 35	3853	53 34 27	3898
	Sun	E.	83 33 34	2871	82 0 38	2853	80 27 19	2835	78 53 36	2816
21	Jupiter	W.	116 55 45	2349	118 40 33	2333	120 25 45	2315	122 11 22	2298
	Spica	W.	60 23 41	2398	62 7 18	2381	63 51 20	2363	65 35 48	2345
	Mars	W.	41 34 5	2464	43 16 9	2445	44 58 39	2428	46 41 34	2410
	Saturn	E.	35 38 43	2447	33 56 15	2433	32 13 27	2420	30 30 21	2408
	α Aquilæ	E.	47 37 21	4234	46 29 27	4330	45 23 2	4439	44 18 16	4564
	Sun	E.	70 59 0	2724	69 22 52	2705	67 46 19	2687	66 9 22	2669
22	Spica	W.	74 24 33	2258	76 11 34	2242	77 58 59	2225	79 46 49	2210
	Mars	W.	55 22 32	2322	57 7 59	2305	58 53 51	2289	60 40 7	2272
	Antares	W.	28 32 42	2279	30 19 13	2258	32 6 14	2239	33 53 44	2220
	Saturn	E.	21 50 55	2369	20 6 36	2371	18 22 19	2377	16 38 11	2390
	Sun	E.	57 58 35	2581	56 19 14	2565	54 39 31	2548	52 59 25	2533
23	Spica	W.	88 51 45	2136	90 41 50	2122	92 32 16	2109	94 23 1	2097
	Mars	W.	69 37 19	2196	71 25 53	2182	73 14 48	2169	75 4 3	2155
	Antares	W.	42 57 47	2137	44 47 49	2123	46 38 13	2100	48 28 59	2086
	Sun	E.	44 33 38	2461	42 51 30	2449	41 9 5	2437	39 26 23	2427
24	Mars	W.	84 14 59	2099	86 6 0	2089	87 57 16	2081	89 48 45	2074
	Antares	W.	57 47 38	2038	59 40 13	2028	61 33 3	2019	63 26 7	2012
	Sun	E.	30 49 43	2392	29 5 57	2391	27 22 8	2390	25 38 20	2393
28	Sun	W.	26 27 40	2495	28 9 0	2502	29 50 11	2511	31 31 9	2520
	Aldebaran	E.	61 5 48	2147	59 16 0	2163	57 26 36	2179	55 37 37	2196

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	22 49 58.15	9.356	S. 7 26 15.1	57.10	16 10.24	65.40	12 30.20	0.499
Sun.	2	22 53 42.43	9.334	7 3 21.5	57.35	16 10.00	65.33	12 17.96	0.521
Mon.	3	22 57 36.20	9.314	6 40 22.1	57.58	16 9.75	65.26	12 5.20	0.541
Tues.	4	23 1 9.48	9.295	6 17 17.2	57.81	16 9.51	65.19	11 51.96	0.560
Wed.	5	23 4 52.30	9.276	5 54 7.1	58.01	16 9.26	65.13	11 38.27	0.579
Thur.	6	23 8 34.68	9.257	5 30 52.5	58.20	16 9.01	65.07	11 24.14	0.597
Frid.	7	23 12 16.62	9.239	5 7 33.5	58.38	16 8.76	65.01	11 9.56	0.615
Sat.	8	23 15 58.16	9.223	4 44 10.6	58.53	16 8.51	64.95	10 54.59	0.631
Sun.	9	23 19 39.31	9.207	4 20 44.3	58.66	16 8.25	64.90	10 39.23	0.647
Mon.	10	23 23 20.11	9.192	3 57 14.8	58.79	16 7.99	64.85	10 23.52	0.662
Tues.	11	23 27 0.56	9.178	3 33 42.4	58.90	16 7.73	64.80	10 7.46	0.676
Wed.	12	23 30 40.71	9.165	3 10 7.7	58.99	16 7.47	64.76	9 51.09	0.689
Thur.	13	23 34 20.56	9.153	2 46 30.9	59.07	16 7.20	64.72	9 34.43	0.701
Frid.	14	23 38 0.13	9.143	2 22 52.4	59.14	16 6.93	64.68	9 17.50	0.711
Sat.	15	23 41 39.45	9.133	1 59 12.6	59.19	16 6.66	64.65	9 0.32	0.721
Sun.	16	23 45 18.55	9.124	1 35 31.7	59.22	16 6.39	64.62	8 42.90	0.730
Mon.	17	23 48 57.46	9.116	1 11 50.1	59.24	16 6.12	64.59	8 25.32	0.738
Tues.	18	23 52 36.20	9.110	0 48 8.1	59.24	16 5.84	64.56	8 7.56	0.744
Wed.	19	23 56 14.79	9.104	0 24 26.1	59.24	16 5.56	64.54	7 49.64	0.750
Thur.	20	23 59 53.25	9.100	S. 0 0 44.4	59.23	16 5.28	64.52	7 31.59	0.754
Frid.	21	0 3 31.60	9.096	N. 0 22 56.5	59.19	16 5.00	64.50	7 13.43	0.758
Sat.	22	0 7 9.86	9.092	0 46 36.4	59.14	16 4.72	64.49	6 55.19	0.762
Sun.	23	0 10 48.06	9.090	1 10 15.0	59.08	16 4.44	64.48	6 36.89	0.764
Mon.	24	0 14 26.20	9.088	1 33 52.0	59.00	16 4.16	64.47	6 18.53	0.766
Tues.	25	0 18 4.30	9.087	1 57 26.8	58.90	16 3.87	64.46	6 0.13	0.767
Wed.	26	0 21 42.39	9.087	2 20 58.9	58.78	16 3.59	64.46	5 41.72	0.767
Thur.	27	0 25 20.49	9.088	2 44 28.2	58.66	16 3.31	64.46	5 23.32	0.766
Frid.	28	0 28 58.61	9.089	3 7 54.3	58.52	16 3.03	64.46	5 4.94	0.765
Sat.	29	0 32 36.77	9.090	3 31 16.9	58.36	16 2.75	64.47	4 46.60	0.764
Sun.	30	0 36 14.99	9.093	3 54 35.4	58.18	16 2.47	64.48	4 28.30	0.761
Mon.	31	0 39 53.27	9.096	4 17 49.5	57.99	16 2.20	64.49	4 10.07	0.758
Tues.	32	0 43 31.63	9.100	N. 4 40 59.0	57.79	16 1.92	64.51	3 51.94	0.754

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	22 49 56.20	9.357	S. 7 26 27.0	57.11	12 30.30	0.499	22 37 25.90
Sun.	2	22 53 40.51	9.335	7 3 33.3	57.36	12 18.06	0.521	22 41 22.45
Mon.	3	22 57 24.31	9.315	6 40 33.7	57.59	12 5.31	0.541	22 45 19.00
Tues.	4	23 1 7.63	9.296	6 17 28.7	57.82	11 52.07	0.560	22 49 15.56
Wed.	5	23 4 50.49	9.277	5 54 18.4	58.02	11 38.38	0.579	22 53 12.11
Thur.	6	23 8 32.91	9.259	5 31 3.6	58.21	11 24.25	0.597	22 57 8.66
Frid.	7	23 12 14.89	9.241	5 7 44.4	58.39	11 9.67	0.615	23 1 5.22
Sat.	8	23 15 56.47	9.225	4 44 21.3	58.54	10 54.70	0.631	23 5 1.77
Sun.	9	23 19 37.67	9.209	4 20 54.7	58.67	10 39.34	0.647	23 8 58.33
Mon.	10	23 23 18.51	9.194	3 57 25.0	58.80	10 23.63	0.662	23 12 54.88
Tues.	11	23 26 59.00	9.180	3 33 52.4	58.91	10 7.57	0.676	23 16 51.43
Wed.	12	23 30 39.19	9.167	3 10 17.5	59.00	9 51.20	0.689	23 20 47.99
Thur.	13	23 34 19.08	9.155	2 46 40.4	59.08	9 34.54	0.701	23 21 44.51
Frid.	14	23 37 58.70	9.145	2 23 1.6	59.15	9 17.61	0.711	23 28 41.09
Sat.	15	23 41 38.08	9.135	1 59 21.5	59.20	9 0.43	0.721	23 32 37.65
Sun.	16	23 45 17.21	9.126	1 35 40.3	59.23	8 43.01	0.730	23 36 34.20
Mon.	17	23 48 56.18	9.118	1 11 58.4	59.25	8 25.43	0.738	23 40 30.75
Tues.	18	23 52 34.96	9.112	0 48 16.2	59.25	8 7.66	0.744	23 41 27.30
Wed.	19	23 56 13.60	9.106	0 24 33.9	59.25	7 49.74	0.750	23 48 23.86
Thur.	20	23 59 52.10	9.102	S. 0 0 51.9	59.24	7 31.69	0.754	23 52 20.41
Frid.	21	0 3 30.49	9.098	N. 0 22 49.3	59.20	7 13.53	0.758	23 56 16.96
Sat.	22	0 7 8.79	9.094	0 46 29.5	59.15	6 55.27	0.762	0 0 13.52
Sun.	23	0 10 47.04	9.092	1 10 8.4	59.09	6 36.97	0.764	0 4 10.07
Mon.	24	0 14 25.23	9.090	1 33 45.7	59.01	6 18.61	0.766	0 8 6.62
Tues.	25	0 18 3.38	9.089	1 57 20.8	58.91	6 0.20	0.767	0 12 3.18
Wed.	26	0 21 41.52	9.089	2 20 53.3	58.79	5 41.79	0.767	0 15 59.73
Thur.	27	0 25 19.67	9.090	2 44 22.9	58.67	5 23.39	0.766	0 19 56.28
Frid.	28	0 28 57.83	9.091	3 7 49.3	58.53	5 5.00	0.765	0 23 52.83
Sat.	29	0 32 36.04	9.093	3 31 12.1	58.37	4 46.67	0.764	0 27 49.39
Sun.	30	0 36 14.30	9.095	3 51 30.9	58.19	4 28.36	0.761	0 31 45.94
Mon.	31	0 39 52.63	9.098	4 17 45.4	58.01	4 10.13	0.758	0 35 42.50
Tues.	32	0 43 31.04	9.102	N. 4 40 55.2	57.80	3 51.99	0.754	0 39 39.05

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. $+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	60	341 1 14.0	1 19.5	150.42	−0.58	9.9962963	+45.2	1 22 20.56
2	61	342 1 23.3	1 28.6	150.34	0.49	.9964051	45.4	1 18 24.65
3	62	343 1 30.6	1 35.9	150.26	0.37	.9965145	45.7	1 14 28.74
4	63	344 1 35.8	1 40.8	150.17	0.23	.9966246	46.0	1 10 32.84
5	64	345 1 38.7	1 43.6	150.08	−0.10	.9967354	46.3	1 6 36.94
6	65	346 1 39.4	1 44.3	149.99	+0.03	.9968468	46.6	1 2 41.03
7	66	347 1 38.0	1 42.8	149.90	0.16	.9969591	47.0	0 58 45.12
8	67	348 1 34.5	1 39.2	149.81	0.27	.9970724	47.4	0 54 49.21
9	68	349 1 28.7	1 33.3	149.72	0.35	.9971868	47.9	0 50 53.30
10	69	350 1 20.7	1 25.2	149.63	0.40	.9973024	48.4	0 46 57.40
11	70	351 1 10.6	1 15.0	149.54	0.44	.9974192	48.9	0 43 1.49
12	71	352 0 58.4	1 2.7	149.46	0.44	.9975372	49.4	0 39 5.58
13	72	353 0 44.1	0 48.3	149.37	0.41	.9976565	50.0	0 35 9.67
14	73	354 0 27.9	0 32.0	149.29	0.36	.9977771	50.5	0 31 13.76
15	74	355 0 9.8	0 13.8	149.20	0.28	.9978988	51.0	0 27 17.85
16	75	355 59 49.7	59 53.6	149.12	0.17	.9980217	51.4	0 23 21.95
17	76	356 59 27.7	59 31.5	149.05	+0.04	.9981457	51.8	0 19 26.05
18	77	357 59 3.9	59 7.6	148.97	−0.09	.9982706	52.1	0 15 30.14
19	78	358 58 38.3	58 41.9	148.90	0.22	.9983961	52.4	0 11 34.23
20	79	359 58 11.0	58 14.5	148.82	0.35	.9985222	52.6	0 7 38.32
21	80	0 57 41.9	57 45.3	148.75	0.47	.9986489	52.8	0 3 42.42 23 59 46.51
22	81	1 57 11.1	57 14.4	148.67	0.57	.9987759	52.9	23 55 50.60
23	82	2 56 38.4	56 41.5	148.60	0.65	.9989031	53.0	23 51 54.69
24	83	3 56 4.0	56 7.1	148.52	0.70	.9990303	53.0	23 47 58.78
25	84	4 55 27.8	55 30.8	148.45	0.72	.9991574	52.9	23 44 2.87
26	85	5 54 49.7	54 52.6	148.37	0.71	.9992842	52.7	23 40 6.96
27	86	6 54 9.7	54 12.5	148.29	0.67	.9994105	52.5	23 36 11.06
28	87	7 53 27.7	53 30.4	148.20	0.60	.9995363	52.3	23 32 15.16
29	88	8 52 43.6	52 46.2	148.11	0.51	.9996617	52.1	23 28 19.25
30	89	9 51 57.4	51 59.9	148.02	0.39	.9997865	51.9	23 24 23.31
31	90	10 51 9.0	51 11.3	147.93	0.27	9.9999106	51.6	23 20 27.43
32	91	11 50 18.3	50 20.5	147.84	−0.14	0.0000342	+51.4	23 16 31.53

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
−9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 23.4	16 16.4	60 2.8	−2.05	59 37.0	−2.24	2 24.5	2.08	2.4
2	16 8.9	16 1.0	59 9.3	2.37	58 40.4	2.43	3 14.1	2.06	3.4
3	15 53.0	15 45.1	58 11.0	2.44	57 41.8	2.40	4 3.7	2.08	4.4
4	15 37.3	15 29.9	57 13.4	2.33	56 46.1	2.21	4 54.0	2.12	5.4
5	15 22.9	15 16.4	56 20.3	2.07	55 56.4	1.91	5 45.2	2.16	6.4
6	15 10.4	15 5.1	55 34.6	1.73	55 14.9	1.54	6 37.3	2.17	7.4
7	15 0.3	14 56.2	54 57.5	1.35	54 42.5	1.15	7 29.5	2.16	8.4
8	14 52.8	14 49.9	54 29.9	0.96	54 19.5	0.77	8 20.8	2.11	9.4
9	14 47.7	14 46.1	54 11.3	0.58	54 5.3	0.41	9 10.4	2.02	10.4
10	14 45.0	14 44.5	54 1.3	−0.25	53 59.3	−0.10	9 57.8	1.92	11.4
11	14 44.4	14 44.8	53 59.0	+0.04	54 0.4	+0.18	10 42.8	1.83	12.4
12	14 45.6	14 46.8	54 3.3	0.30	54 7.6	0.41	11 25.7	1.75	13.4
13	14 48.3	14 50.1	54 13.2	0.52	54 20.0	0.61	12 7.2	1.70	14.4
14	14 52.3	14 54.7	54 27.9	0.70	54 36.8	0.79	12 47.9	1.69	15.4
15	14 57.4	15 0.4	54 46.8	0.87	54 57.8	0.95	13 28.8	1.72	16.4
16	15 3.6	15 7.2	55 9.8	1.04	55 22.7	1.12	14 10.7	1.79	17.4
17	15 10.9	15 15.0	55 36.6	1.20	55 51.5	1.28	14 54.8	1.90	18.4
18	15 19.3	15 23.9	56 7.4	1.36	56 24.2	1.44	15 42.2	2.05	19.4
19	15 28.8	15 33.9	56 42.0	1.52	57 0.7	1.59	16 33.3	2.22	20.4
20	15 39.2	15 44.7	57 20.3	1.66	57 40.7	1.73	17 28.7	2.39	21.4
21	15 50.4	15 56.2	58 1.6	1.77	58 22.9	1.78	18 27.7	2.51	22.4
22	16 2.1	16 7.8	58 44.3	1.77	59 5.4	1.73	19 28.7	2.55	23.4
23	16 13.3	16 18.6	59 25.8	1.65	59 45.0	1.54	20 29.6	2.51	24.4
24	16 23.4	16 27.5	60 2.5	1.38	60 17.8	1.17	21 28.5	2.40	25.4
25	16 30.9	16 33.4	60 30.3	0.91	60 39.6	+0.62	22 24.7	2.27	26.4
26	16 34.9	16 35.3	60 45.2	+0.30	60 46.7	−0.04	23 18.1	2.17	27.4
27	16 34.6	16 32.8	60 44.1	−0.39	60 37.4	0.74	☌		28.4
28	16 29.9	16 25.9	60 26.5	1.07	60 11.7	1.38	0 9.5	2.11	29.4
29	16 20.9	16 15.1	59 53.5	1.65	59 32.2	1.88	0 59.9	2.11	1.0
30	16 8.6	16 1.7	59 8.5	2.06	58 42.9	2.19	1 50.4	2.12	2.0
31	15 54.4	15 47.0	58 16.2	2.26	57 49.0	2.28	2 41.7	2.16	3.0
32	15 39.6	15 32.3	57 21.7	−2.26	56 55.0	−2.19	3 34.2	2.21	4.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 57 4.77	2.1792	N. 2 22 17.3	16.209
1	0 59 15.47	2.1775	2 38 28.9	16.176
2	1 1 26.07	2.1758	2 54 38.5	16.141
3	1 3 36.58	2.1743	3 10 45.9	16.105
4	1 5 46.99	2.1728	3 26 51.1	16.068
5	1 7 57.31	2.1713	3 42 54.0	16.029
6	1 10 7.54	2.1699	3 58 54.6	15.989
7	1 12 17.69	2.1686	4 14 52.7	15.947
8	1 14 27.76	2.1673	4 30 48.2	15.903
9	1 16 37.76	2.1661	4 46 41.0	15.857
10	1 18 47.69	2.1650	5 2 31.0	15.811
11	1 20 57.56	2.1639	5 18 18.3	15.763
12	1 23 7.36	2.1628	5 34 2.7	15.714
13	1 25 17.10	2.1619	5 49 44.1	15.663
14	1 27 26.79	2.1610	6 5 22.4	15.610
15	1 29 36.44	2.1603	6 20 57.4	15.557
16	1 31 46.04	2.1596	6 36 29.2	15.502
17	1 33 55.60	2.1589	6 51 57.7	15.446
18	1 36 5.11	2.1583	7 7 22.7	15.388
19	1 38 14.59	2.1578	7 22 44.2	15.329
20	1 40 24.05	2.1573	7 38 2.2	15.269
21	1 42 33.48	2.1569	7 53 16.5	15.207
22	1 44 42.89	2.1566	8 8 27.1	15.144
23	1 46 52.28	2.1563	N. 8 23 33.8	15.080

SUNDAY 2.

Hour.	Right Ascension.	Diff. for m.	Declination.	Diff. for 1 m.
0	1 49 1.64	2.1561	N. 8 38 36.7	15.015
1	1 51 11.00	2.1560	8 53 35.6	14.948
2	1 53 20.35	2.1559	9 8 30.4	14.880
3	1 55 29.70	2.1558	9 23 21.2	14.811
4	1 57 39.05	2.1558	9 38 7.8	14.740
5	1 59 48.40	2.1559	9 52 50.1	14.669
6	2 1 57.76	2.1561	10 7 28.1	14.596
7	2 4 7.13	2.1563	10 22 1.7	14.521
8	2 6 16.51	2.1565	10 36 30.8	14.446
9	2 8 25.90	2.1568	10 50 55.3	14.370
10	2 10 35.32	2.1571	11 5 15.3	14.293
11	2 12 44.76	2.1575	11 19 30.6	14.214
12	2 14 54.22	2.1580	11 33 41.1	14.134
13	2 17 3.71	2.1585	11 47 46.8	14.054
14	2 19 13.24	2.1590	12 1 47.7	13.973
15	2 21 22.80	2.1596	12 15 43.6	13.890
16	2 23 32.39	2.1602	12 29 34.5	13.806
17	2 25 42.02	2.1609	12 43 20.3	13.721
18	2 27 51.70	2.1617	12 57 1.0	13.634
19	2 30 1.43	2.1625	13 10 36.5	13.547
20	2 32 11.20	2.1633	13 24 6.7	13.460
21	2 34 21.02	2.1642	13 37 31.7	13.371
22	2 36 30.90	2.1651	13 50 51.3	13.280
23	2 38 40.83	2.1660	14 4 5.4	13.189
24	2 40 50.82	2.1670	N.14 17 14.0	13.097

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 40 50.82	2.1670	N.14 17 14.0	13.097
1	2 43 0.87	2.1681	14 30 17.1	13.004
2	2 45 10.99	2.1692	14 43 14.6	12.910
3	2 47 21.17	2.1703	14 56 6.4	12.815
4	2 49 31.42	2.1714	15 8 52.5	12.719
5	2 51 41.74	2.1725	15 21 32.8	12.622
6	2 53 52.12	2.1737	15 34 7.2	12.524
7	2 56 2.58	2.1749	15 46 35.8	12.426
8	2 58 13.11	2.1762	15 58 58.4	12.327
9	3 0 23.72	2.1775	16 11 15.0	12.226
10	3 2 34.41	2.1789	16 23 25.6	12.125
11	3 4 45.18	2.1803	16 35 30.1	12.024
12	3 6 56.04	2.1816	16 47 28.5	11.921
13	3 9 6.98	2.1830	16 59 20.7	11.817
14	3 11 18.00	2.1844	17 11 6.6	11.712
15	3 13 29.11	2.1858	17 22 46.2	11.607
16	3 15 40.30	2.1873	17 34 19.5	11.501
17	3 17 51.59	2.1888	17 45 46.4	11.394
18	3 20 2.96	2.1903	17 57 6.8	11.286
19	3 22 14.43	2.1918	18 8 20.7	11.178
20	3 24 25.98	2.1933	18 19 28.1	11.069
21	3 26 37.63	2.1949	18 30 29.0	10.959
22	3 28 49.37	2.1965	18 41 23.2	10.848
23	3 31 1.21	2.1981	N.18 52 10.8	10.737

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 33 13.15	2.1997	N.19 2 51.7	10.625
1	3 35 25.18	2.2013	19 13 25.8	10.512
2	3 37 37.31	2.2029	19 23 53.1	10.399
3	3 39 49.53	2.2045	19 34 13.7	10.284
4	3 42 1.85	2.2061	19 44 27.4	10.169
5	3 44 14.27	2.2078	19 54 34.1	10.054
6	3 46 26.78	2.2094	20 4 33.8	9.937
7	3 48 39.39	2.2111	20 14 26.6	9.820
8	3 50 52.11	2.2127	20 24 12.3	9.703
9	3 53 4.92	2.2143	20 33 51.0	9.585
10	3 55 17.83	2.2159	20 43 22.6	9.466
11	3 57 30.83	2.2175	20 52 47.0	9.347
12	3 59 43.93	2.2191	21 2 4.2	9.227
13	4 1 57.13	2.2207	21 11 14.2	9.106
14	4 4 10.42	2.2223	21 20 17.0	8.985
15	4 6 23.81	2.2239	21 29 12.5	8.863
16	4 8 37.29	2.2255	21 38 0.7	8.741
17	4 10 50.87	2.2271	21 46 41.5	8.618
18	4 13 4.55	2.2287	21 55 15.0	8.495
19	4 15 18.32	2.2303	22 3 41.1	8.372
20	4 17 32.18	2.2318	22 11 59.7	8.248
21	4 19 46.13	2.2333	22 20 10.8	8.123
22	4 22 0.17	2.2348	22 28 14.4	7.998
23	4 24 14.30	2.2363	22 36 10.5	7.872
24	4 26 28.52	2.2377	N.22 43 59.0	7.746

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 26 28.52	2.2377	N.22 43 59.0	7.746
1	4 28 42.82	2.2391	22 51 39.9	7.619
2	4 30 57.21	2.2405	22 59 13.2	7.491
3	4 33 11.68	2.2419	23 6 39.0	7.364
4	4 35 26.24	2.2433	23 13 57.1	7.236
5	4 37 40.88	2.2446	23 21 7.5	7.108
6	4 39 55.59	2.2459	23 28 10.1	6.980
7	4 42 10.38	2.2471	23 35 5.0	6.851
8	4 44 25.24	2.2483	23 41 52.2	6.721
9	4 46 40.18	2.2495	23 48 31.6	6.591
10	4 48 55.18	2.2507	23 55 3.2	6.461
11	4 51 10.26	2.2518	24 1 27.0	6.331
12	4 53 25.40	2.2529	24 7 42.9	6.200
13	4 55 40.61	2.2539	24 13 51.0	6.069
14	4 57 55.87	2.2549	24 19 51.2	5.937
15	5 0 11.20	2.2569	24 25 43.5	5.805
16	5 2 26.58	2.2569	24 31 27.9	5.673
17	5 4 42.02	2.2578	24 37 4.3	5.541
18	5 6 57.52	2.2586	24 42 32.8	5.408
19	5 9 13.06	2.2594	24 47 53.4	5.273
20	5 11 28.65	2.2601	24 53 6.0	5.142
21	5 13 44.28	2.2608	24 58 10.5	5.009
22	5 15 59.95	2.2615	25 3 7.0	4.876
23	5 18 15.66	2.2621	N.25 7 55.6	4.742

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 20 31.40	2.2627	N.25 12 36.2	4.608
1	5 22 47.18	2.2632	25 17 8.7	4.474
2	5 25 2.99	2.2636	25 21 33.2	4.340
3	5 27 18.82	2.2640	25 25 49.6	4.206
4	5 29 34.67	2.2644	25 29 57.9	4.071
5	5 31 50.54	2.2647	25 33 58.2	3.937
6	5 34 6.44	2.2650	25 37 50.4	3.802
7	5 36 22.35	2.2652	25 41 34.5	3.667
8	5 38 38.27	2.2653	25 45 10.5	3.533
9	5 40 54.19	2.2653	25 48 38.5	3.398
10	5 43 10.12	2.2654	25 51 58.4	3.263
11	5 45 26.05	2.2654	25 55 10.2	3.129
12	5 47 41.97	2.2653	25 58 13.8	2.994
13	5 49 57.89	2.2651	26 1 9.4	2.859
14	5 52 13.80	2.2649	26 3 56.9	2.723
15	5 54 29.69	2.2647	26 6 36.2	2.588
16	5 56 45.57	2.2644	26 9 7.4	2.453
17	5 59 1.43	2.2640	26 11 30.5	2.318
18	6 1 17.26	2.2636	26 13 45.6	2.183
19	6 3 33.06	2.2631	26 15 52.6	2.048
20	6 5 48.83	2.2626	26 17 51.5	1.914
21	6 8 4.57	2.2619	26 19 42.2	1.779
22	6 10 20.27	2.2612	26 21 24.9	1.644
23	6 12 35.92	2.2604	26 22 59.5	1.510
24	6 14 51.53	2.2596	N.26 24 26.1	1.375

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 14 51.53	2.2596	N.26 24 26.1	1.375
1	6 17 7.08	2.2587	26 25 44.7	1.241
2	6 19 22.58	2.2578	26 26 55.2	1.107
3	6 21 38.02	2.2568	26 27 57.5	0.973
4	6 23 53.40	2.2557	26 28 51.9	0.840
5	6 26 8.71	2.2546	26 29 38.3	0.706
6	6 28 23.95	2.2534	26 30 16.6	0.573
7	6 30 39.12	2.2522	26 30 46.9	0.440
8	6 32 54.21	2.2509	26 31 9.3	0.306
9	6 35 9.22	2.2495	26 31 23.8	0.173
10	6 37 24.15	2.2481	26 31 30.3	+0.041
11	6 39 38.99	2.2466	26 31 28.8	−0.091
12	6 41 53.74	2.2450	26 31 19.3	0.223
13	6 44 8.39	2.2434	26 31 1.9	0.355
14	6 46 22.94	2.2417	26 30 36.7	0.487
15	6 48 37.40	2.2400	26 30 3.6	0.618
16	6 50 51.75	2.2382	26 29 22.6	0.748
17	6 53 5.99	2.2364	26 28 33.8	0.878
18	6 55 20.12	2.2345	26 27 37.2	1.008
19	6 57 34.13	2.2325	26 26 32.8	1.138
20	6 59 48.02	2.2305	26 25 20.6	1.268
21	7 2 1.79	2.2284	26 24 0.7	1.397
22	7 4 15.43	2.2263	26 22 33.0	1.526
23	7 6 28.94	2.2241	N.26 20 57.6	1.654

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 8 42.32	2.2218	N.26 19 14.5	1.782
1	7 10 55.56	2.2195	26 17 23.7	1.909
2	7 13 8.66	2.2172	26 15 25.3	2.036
3	7 15 21.62	2.2148	26 13 19.3	2.163
4	7 17 34.43	2.2123	26 11 5.7	2.289
5	7 19 47.09	2.2098	26 8 44.6	2.414
6	7 21 59.61	2.2072	26 6 15.9	2.540
7	7 24 11.97	2.2046	26 3 39.7	2.665
8	7 26 24.16	2.2019	26 0 56.1	2.789
9	7 28 36.19	2.1992	25 58 5.0	2.913
10	7 30 48.06	2.1964	25 55 6.5	3.036
11	7 32 59.76	2.1936	25 52 0.6	3.159
12	7 35 11.29	2.1907	25 48 47.3	3.282
13	7 37 22.65	2.1878	25 45 26.7	3.404
14	7 39 33.83	2.1848	25 41 58.8	3.526
15	7 41 44.83	2.1818	25 38 23.7	3.646
16	7 43 55.65	2.1788	25 34 41.3	3.766
17	7 46 6.29	2.1758	25 30 51.7	3.886
18	7 48 16.75	2.1727	25 26 55.0	4.005
19	7 50 27.02	2.1695	25 22 51.1	4.123
20	7 52 37.09	2.1663	25 18 40.2	4.241
21	7 54 46.97	2.1631	25 14 22.2	4.358
22	7 56 56.66	2.1598	25 9 57.2	4.475
23	7 59 6.15	2.1565	25 5 25.2	4.591
24	8 1 15.45	2.1532	N.25 0 46.2	4.707

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 9.					TUESDAY 11.			
	h m s	s	′ ″	″		h m s	s	° ′ ″	″
0	8 1 15.45	2.1532	N.25 0 46.2	4.707	0	9 40 25.24	1.9767	N.19 14 28.9	9.445
1	8 3 24.54	2.1499	24 56 0.3	4.822	1	9 42 23.74	1.9732	19 4 59.7	9.526
2	8 5 33.43	2.1465	24 51 7.6	4.936	2	9 44 22.02	1.9696	18 55 25.8	9.605
3	8 7 42.12	2.1431	24 46 8.0	5.049	3	9 46 20.09	1.9661	18 55 47.1	9.684
4	8 9 50.60	2.1396	24 41 1.6	5.162	4	9 48 17.95	1.9625	18 36 3.7	9.762
5	8 11 58.87	2.1361	24 35 48.4	5.275	5	9 50 15.59	1.9590	18 26 15.6	9.839
6	8 14 6.93	2.1326	24 30 28.5	5.387	6	9 52 13.03	1.9555	18 16 22.9	9.916
7	8 16 14.78	2.1291	24 25 1.9	5.498	7	9 54 10.26	1.9521	18 6 25.6	9.992
8	8 18 22.42	2.1255	24 19 28.7	5.609	8	9 56 7.28	1.9487	17 56 23.8	10.067
9	8 20 29.84	2.1220	24 13 48.8	5.719	9	9 58 4.10	1.9454	17 46 17.5	10.141
10	8 22 37.05	2.1184	24 8 2.3	5.828	10	10 0 0.72	1.9420	17 36 6.8	10.215
11	8 24 44.04	2.1148	24 2 9.4	5.936	11	10 1 57.14	1.9387	17 25 51.7	10.288
12	8 26 50.82	2.1112	23 56 10.0	6.044	12	10 3 53.36	1.9354	17 15 32.2	10.360
13	8 28 57.38	2.1075	23 50 4.1	6.151	13	10 5 49.38	1.9321	17 5 8.4	10.431
14	8 31 3.72	2.1038	23 43 51.8	6.257	14	10 7 45.21	1.9288	16 54 40.4	10.501
15	8 33 9.83	2.1001	23 37 33.2	6.363	15	10 9 40.84	1.9256	16 44 8.2	10.571
16	8 35 15.72	2.0964	23 31 8.2	6.468	16	10 11 36.28	1.9224	16 33 31.8	10.640
17	8 37 21.39	2.0927	23 24 37.0	6.572	17	10 13 31.53	1.9193	16 22 51.3	10.709
18	8 39 26.84	2.0889	23 17 59.5	6.676	18	10 15 26.59	1.9162	16 12 6.7	10.776
19	8 41 32.07	2.0852	23 11 15.8	6.779	19	10 17 21.47	1.9131	16 1 18.1	10.843
20	8 43 37.07	2.0814	23 4 26.0	6.881	20	10 19 16.16	1.9100	15 50 25.6	10.909
21	8 45 41.83	2.0777	22 57 30.0	6.983	21	10 21 10.67	1.9070	15 39 29.1	10.974
22	8 47 46.37	2.0739	22 50 27.9	7.084	22	10 23 5.00	1.9040	15 28 28.7	11.038
23	8 49 50.69	2.0702	N.22 43 19.8	7.184	23	10 24 59.15	1.9011	N.15 17 24.5	11.101
	MONDAY 10.					WEDNESDAY 12.			
0	8 51 54.79	2.0663	N.22 36 5.8	7.283	0	10 26 53.13	1.8982	N.15 6 16.5	11.164
1	8 53 58.66	2.0625	22 28 45.8	7.382	1	10 28 46.93	1.8953	14 55 4.7	11.226
2	8 56 2.30	2.0587	22 21 19.9	7.480	2	10 30 40.57	1.8925	14 43 49.3	11.287
3	8 58 5.71	2.0550	22 13 48.2	7.577	3	10 32 34.04	1.8898	14 32 30.2	11.348
4	9 0 8.89	2.0512	22 6 10.7	7.674	4	10 34 27.34	1.8870	14 21 7.5	11.407
5	9 2 11.85	2.0474	21 58 27.4	7.770	5	10 36 20.48	1.8843	14 9 41.3	11.466
6	9 4 14.58	2.0436	21 50 38.3	7.865	6	10 38 13.45	1.8816	13 58 11.5	11.525
7	9 6 17.08	2.0398	21 42 43.5	7.959	7	10 40 6.27	1.8790	13 46 38.2	11.583
8	9 8 19.36	2.0360	21 34 43.2	8.052	8	10 41 58.93	1.8764	13 35 1.6	11.639
9	9 10 21.41	2.0323	21 26 37.3	8.145	9	10 43 51.44	1.8739	13 23 21.6	11.694
10	9 12 23.23	2.0285	21 18 25.8	8.237	10	10 45 43.80	1.8714	13 11 38.2	11.749
11	9 14 24.83	2.0248	21 10 8.9	8.327	11	10 47 36.01	1.8689	12 59 51.6	11.804
12	9 16 26.20	2.0210	21 1 46.5	8.417	12	10 49 28.07	1.8665	12 48 1.7	11.857
13	9 18 27.34	2.0172	20 53 18.7	8.507	13	10 51 19.99	1.8642	12 36 8.6	11.910
14	9 20 28.26	2.0134	20 44 45.5	8.596	14	10 53 11.77	1.8619	12 24 12.4	11.961
15	9 22 28.95	2.0097	20 36 7.0	8.684	15	10 55 3.41	1.8596	12 12 13.2	12.012
16	9 24 29.42	2.0060	20 27 23.2	8.772	16	10 56 54.92	1.8574	12 0 10.9	12.063
17	9 26 29.67	2.0023	20 18 34.2	8.859	17	10 58 46.29	1.8552	11 48 5.6	12.113
18	9 28 29.70	1.9986	20 9 40.1	8.945	18	11 0 37.54	1.8531	11 35 57.3	12.162
19	9 30 29.51	1.9949	20 0 40.8	9.030	19	11 2 28.66	1.8510	11 23 46.1	12.211
20	9 32 29.09	1.9912	19 51 36.4	9.115	20	11 4 19.66	1.8489	11 11 32.0	12.258
21	9 34 28.46	1.9876	19 42 27.0	9.198	21	11 6 10.53	1.8469	10 59 15.1	12.305
22	9 36 27.60	1.9839	19 33 12.6	9.281	22	11 8 1.29	1.8450	10 46 55.4	12.350
23	9 38 26.53	1.9803	19 23 53.2	9.364	23	11 9 51.93	1.8431	10 34 33.0	12.395
24	9 40 25.24	1.9767	N.19 14 28.9	9.445	24	11 11 42.46	1.8412	N.10 22 8.0	12.439

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 11 42.46	1.8412	N.10 22 8.0	12.439
1	11 13 32.88	1.8394	10 9 40.3	12.483
2	11 15 23.19	1.8377	9 57 10.0	12.526
3	11 17 13.40	1.8360	9 44 37.1	12.568
4	11 19 3.51	1.8344	9 32 1.7	12.609
5	11 20 53.53	1.8328	9 19 23.9	12.650
6	11 22 43.45	1.8313	9 6 43.7	12.690
7	11 24 33.28	1.8298	8 54 1.1	12.729
8	11 26 23.02	1.8284	8 41 16.2	12.766
9	11 28 12.68	1.8270	8 28 29.1	12.803
10	11 30 2.26	1.8256	8 15 39.7	12.840
11	11 31 51.76	1.8243	8 2 48.2	12.877
12	11 33 41.18	1.8231	7 49 54.5	12.912
13	11 35 30.53	1.8219	7 36 58.7	12.947
14	11 37 19.81	1.8208	7 24 0.9	12.980
15	11 39 9.03	1.8198	7 11 1.2	13.013
16	11 40 58.19	1.8188	6 57 59.5	13.044
17	11 42 47.29	1.8179	6 44 55.9	13.075
18	11 44 36.34	1.8170	6 31 50.4	13.106
19	11 46 25.33	1.8162	6 18 43.1	13.136
20	11 48 14.28	1.8154	6 5 34.1	13.165
21	11 50 3.18	1.8147	5 52 23.3	13.193
22	11 51 52.04	1.8140	5 39 10.9	13.220
23	11 53 40.86	1.8133	N. 5 25 56.9	13.246

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 55 29.64	1.8128	N. 5 12 41.3	13.272
1	11 57 18.39	1.8123	4 59 24.2	13.297
2	11 59 7.12	1.8119	4 46 5.6	13.322
3	12 0 55.82	1.8115	4 32 45.5	13.346
4	12 2 44.50	1.8112	4 19 24.0	13.368
5	12 4 33.16	1.8109	4 6 1.2	13.389
6	12 6 21.81	1.8107	3 52 37.2	13.410
7	12 8 10.45	1.8106	3 39 11.9	13.431
8	12 9 59.08	1.8105	3 25 45.4	13.451
9	12 11 47.71	1.8105	3 12 17.7	13.470
10	12 13 36.34	1.8105	2 58 48.9	13.488
11	12 15 24.97	1.8106	2 45 19.1	13.505
12	12 17 13.61	1.8108	2 31 48.3	13.521
13	12 19 2.26	1.8110	2 18 16.5	13.537
14	12 20 50.93	1.8113	2 4 43.8	13.552
15	12 22 39.62	1.8117	1 51 10.2	13.566
16	12 24 28.33	1.8121	1 37 35.8	13.579
17	12 26 17.06	1.8125	1 24 0.7	13.592
18	12 28 5.83	1.8131	1 10 24.8	13.604
19	12 29 54.63	1.8137	0 56 48.2	13.615
20	12 31 43.47	1.8143	0 43 11.0	13.624
21	12 33 32.35	1.8150	0 29 33.3	13.633
22	12 35 21.27	1.8158	0 15 55.0	13.641
23	12 37 10.24	1.8166	N. 0 2 16.3	13.649
24	12 38 59.26	1.8175	S. 0 11 22.9	13.656

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 38 59.26	1.8175	S. 0 11 22.9	13.656
1	12 40 48.33	1.8184	0 25 2.5	13.662
2	12 42 37.47	1.8195	0 38 42.4	13.667
3	12 44 26.67	1.8206	0 52 22.6	13.671
4	12 46 15.94	1.8217	1 6 3.0	13.674
5	12 48 5.28	1.8229	1 19 43.6	13.677
6	12 49 54.69	1.8242	1 33 24.3	13.679
7	12 51 44.18	1.8255	1 47 5.1	13.680
8	12 53 33.75	1.8269	2 0 45.9	13.681
9	12 55 23.40	1.8283	2 14 26.8	13.681
10	12 57 13.15	1.8299	2 28 7.6	13.679
11	12 59 2.99	1.8315	2 41 48.2	13.675
12	13 0 52.93	1.8332	2 55 28.6	13.672
13	13 2 42.97	1.8349	3 9 8.8	13.668
14	13 4 33.12	1.8367	3 22 48.8	13.663
15	13 6 23.38	1.8386	3 36 28.5	13.658
16	13 8 13.75	1.8405	3 50 7.8	13.651
17	13 10 4.23	1.8424	4 3 46.6	13.643
18	13 11 54.84	1.8445	4 17 25.0	13.635
19	13 13 45.58	1.8467	4 31 2.9	13.626
20	13 15 36.44	1.8489	4 44 40.1	13.615
21	13 17 27.44	1.8511	4 58 16.7	13.604
22	13 19 18.57	1.8534	5 11 52.6	13.592
23	13 21 9.84	1.8558	S. 5 25 27.7	13.579

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 23 1.26	1.8583	S. 5 39 2.1	13.565
1	13 24 52.83	1.8608	5 52 35.6	13.551
2	13 26 44.55	1.8634	6 6 8.2	13.536
3	13 28 36.43	1.8660	6 19 39.9	13.520
4	13 30 28.47	1.8687	6 33 10.6	13.502
5	13 32 20.67	1.8714	6 46 40.1	13.483
6	13 34 13.04	1.8743	7 0 8.5	13.463
7	13 36 5.58	1.8772	7 13 35.7	13.443
8	13 37 58.30	1.8802	7 27 1.7	13.422
9	13 39 51.20	1.8833	7 40 26.5	13.401
10	13 41 44.29	1.8864	7 53 49.9	13.378
11	13 43 37.56	1.8895	8 7 11.8	13.354
12	13 45 31.03	1.8928	8 20 32.3	13.329
13	13 47 24.69	1.8961	8 33 51.3	13.303
14	13 49 18.56	1.8994	8 47 8.7	13.276
15	13 51 12.63	1.9028	9 0 24.4	13.248
16	13 53 6.90	1.9063	9 13 38.4	13.219
17	13 55 1.39	1.9099	9 26 50.7	13.190
18	13 56 56.09	1.9136	9 40 1.3	13.159
19	13 58 51.01	1.9173	9 53 10.0	13.128
20	14 0 46.16	1.9210	10 6 16.7	13.095
21	14 2 41.53	1.9248	10 19 21.3	13.060
22	14 4 37.14	1.9287	10 32 23.9	13.025
23	14 6 32.98	1.9327	10 45 24.4	12.990
24	14 8 29.06	1.9367	S.10 58 22.7	12.953

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 17.					WEDNESDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 8 29.06	1.9367	S.10 58 22.7	12.953	0	15 47 12.55	2.1965	S.20 16 43.8	9.854
1	14 10 25.38	1.9408	11 11 18.8	12.915	1	15 49 24.54	2.2030	20 26 32.2	9.759
2	14 12 21.95	1.9450	11 24 12.6	12.876	2	15 51 36.91	2.2095	20 36 14.8	9.662
3	14 14 18.77	1.9492	11 37 4.0	12.836	3	15 53 49.67	2.2160	20 45 51.7	9.564
4	14 16 15.85	1.9535	11 49 53.0	12.796	4	15 56 2.83	2.2226	20 55 22.7	9.466
5	14 18 13.18	1.9578	12 2 39.5	12.754	5	15 58 16.38	2.2292	21 4 47.7	9.366
6	14 20 10.78	1.9622	12 15 23.5	12.710	6	16 0 30.33	2.2357	21 14 6.6	9.264
7	14 22 8.65	1.9667	12 28 4.9	12.666	7	16 2 44.67	2.2423	21 23 19.4	9.161
8	14 24 6.78	1.9712	12 40 43.5	12.621	8	16 4 59.41	2.2489	21 32 25.9	9.056
9	14 26 5.18	1.9758	12 53 19.4	12.574	9	16 7 14.54	2.2555	21 41 26.2	8.950
10	14 28 3.87	1.9805	13 5 52.5	12.527	10	16 9 30.07	2.2621	21 50 20.1	8.843
11	14 30 2.84	1.9852	13 18 22.7	12.479	11	16 11 46.00	2.2688	21 59 7.4	8.734
12	14 32 2.09	1.9900	13 30 50.0	12.429	12	16 14 2.32	2.2754	22 7 48.2	8.624
13	14 34 1.63	1.9948	13 43 14.3	12.378	13	16 16 19.04	2.2820	22 16 22.4	8.513
14	14 36 1.46	1.9997	13 55 35.5	12.327	14	16 18 36.16	2.2887	22 24 49.8	8.400
15	14 38 1.59	2.0046	14 7 53.5	12.274	15	16 20 53.68	2.2953	22 33 10.5	8.267
16	14 40 2.01	2.0096	14 20 8.3	12.220	16	16 23 11.59	2.3020	22 41 24.3	8.172
17	14 42 2.73	2.0147	14 32 19.9	12.165	17	16 25 29.91	2.3086	22 49 31.2	8.056
18	14 44 3.77	2.0198	14 44 28.2	12.108	18	16 27 48.62	2.3152	22 57 31.0	7.938
19	14 46 5.11	2.0250	14 56 33.0	12.051	19	16 30 7.73	2.3218	23 5 23.7	7.818
20	14 48 6.77	2.0303	15 8 34.3	11.992	20	16 32 27.23	2.3284	23 13 9.2	7.697
21	14 50 8.75	2.0356	15 20 32.1	11.932	21	16 34 47.13	2.3349	23 20 47.4	7.575
22	14 52 11.04	2.0409	15 32 26.3	11.872	22	16 37 7.42	2.3415	23 28 18.3	7.452
23	14 54 13.66	2.0463	S.15 44 16.8	11.810	23	16 39 28.11	2.3480	S.23 35 41.7	7.327
	TUESDAY 18.					THURSDAY 20.			
0	14 56 16.60	2.0518	S.15 56 3.5	11.746	0	16 41 49.18	2.3545	S.23 42 57.6	7.201
1	14 58 19.87	2.0573	16 7 46.4	11.681	1	16 44 10.65	2.3610	23 50 5.8	7.073
2	15 0 23.48	2.0629	16 19 25.3	11.616	2	16 46 32.50	2.3675	23 57 6.4	6.944
3	15 2 27.42	2.0685	16 31 0.3	11.549	3	16 48 54.74	2.3739	24 3 59.2	6.814
4	15 4 31.70	2.0741	16 42 31.2	11.481	4	16 51 17.37	2.3804	24 10 44.2	6.682
5	15 6 36.32	2.0798	16 53 58.0	11.412	5	16 53 40.38	2.3868	24 17 21.2	6.549
6	15 8 41.28	2.0856	17 5 20.7	11.341	6	16 56 3.78	2.3931	24 23 50.1	6.415
7	15 10 46.59	2.0914	17 16 39.1	11.269	7	16 58 27.55	2.3993	24 30 11.0	6.279
8	15 12 52.25	2.0973	17 27 53.1	11.196	8	17 0 51.70	2.4056	24 36 23.7	6.143
9	15 14 58.27	2.1032	17 39 2.6	11.121	9	17 3 16.22	2.4118	24 42 28.2	6.005
10	15 17 4.64	2.1092	17 50 7.7	11.046	10	17 5 41.11	2.4179	24 48 24.4	5.866
11	15 19 11.37	2.1152	18 1 8.2	10.969	11	17 8 6.36	2.4239	24 54 12.1	5.725
12	15 21 18.46	2.1212	18 12 4.1	10.891	12	17 10 31.98	2.4300	24 59 51.4	5.583
13	15 23 25.91	2.1273	18 22 55.3	10.812	13	17 12 57.96	2.4360	25 5 22.2	5.440
14	15 25 33.73	2.1334	18 33 41.6	10.731	14	17 15 24.30	2.4419	25 10 44.3	5.295
15	15 27 41.92	2.1396	18 44 23.0	10.649	15	17 17 50.99	2.4478	25 15 57.6	5.149
16	15 29 50.48	2.1458	18 54 59.5	10.566	16	17 20 18.04	2.4537	25 21 2.2	5.003
17	15 31 59.41	2.1520	19 5 30.9	10.481	17	17 22 45.44	2.4595	25 25 58.0	4.855
18	15 34 8.72	2.1583	19 15 57.3	10.395	18	17 25 13.18	2.4652	25 30 44.9	4.706
19	15 36 18.41	2.1646	19 26 18.5	10.308	19	17 27 41.26	2.4708	25 35 22.8	4.556
20	15 38 28.47	2.1709	19 36 34.4	10.219	20	17 30 9.67	2.4763	25 39 51.6	4.404
21	15 40 38.91	2.1773	19 46 44.9	10.130	21	17 32 38.41	2.4817	25 44 11.2	4.250
22	15 42 49.74	2.1837	19 56 50.0	10.040	22	17 35 7.47	2.4870	25 48 21.6	4.096
23	15 45 0.95	2.1901	20 6 49.7	9.948	23	17 37 36.85	2.4923	25 52 22.8	3.941
24	15 47 12.55	2.1965	S.20 16 43.8	9.854	24	17 40 6.55	2.4975	S.25 56 14.7	3.765

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 40 6.55	2.4975	S.25 56 14.7	3.785
1	17 42 36.56	2.5027	25 59 57.1	3.628
2	17 45 6.87	2.5077	26 3 30.0	3.470
3	17 47 37.48	2.5127	26 6 53.5	3.311
4	17 50 8.39	2.5175	26 10 7.4	3.150
5	17 52 39.58	2.5223	26 13 11.6	2.988
6	17 55 11.06	2.5269	26 16 5.8	2.826
7	17 57 42.81	2.5314	26 18 50.4	2.662
8	18 0 14.83	2.5358	26 21 25.2	2.498
9	18 2 47.11	2.5402	26 23 50.2	2.333
10	18 5 19.65	2.5445	26 26 5.2	2.166
11	18 7 52.45	2.5487	26 28 10.1	1.998
12	18 10 25.49	2.5527	26 30 5.0	1.830
13	18 12 58.77	2.5566	26 31 49.8	1.662
14	18 15 32.28	2.5603	26 33 24.5	1.492
15	18 18 6.01	2.5639	26 34 49.0	1.322
16	18 20 39.95	2.5674	26 36 3.2	1.150
17	18 23 14.10	2.5708	26 37 7.1	0.978
18	18 25 48.45	2.5742	26 38 0.5	0.806
19	18 28 23.00	2.5774	26 38 43.7	0.633
20	18 30 57.74	2.5804	26 39 16.4	0.459
21	18 33 32.66	2.5834	26 39 38.7	0.284
22	18 36 7.75	2.5862	26 39 50.5	−0.109
23	18 38 43.00	2.5888	S.26 39 51.8	+0.067

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 41 18.41	2.5913	S.26 39 42.5	0.243
1	18 43 53.97	2.5938	26 39 22.6	0.420
2	18 46 29.67	2.5961	26 38 52.1	0.597
3	18 49 5.50	2.5983	26 38 11.0	0.774
4	18 51 41.46	2.6003	26 37 19.2	0.952
5	18 54 17.53	2.6021	26 36 16.7	1.131
6	18 56 53.71	2.6038	26 35 3.4	1.310
7	18 59 29.99	2.6054	26 33 39.4	1.489
8	19 2 6.36	2.6068	26 32 4.6	1.668
9	19 4 42.82	2.6082	26 30 19.1	1.848
10	19 7 19.35	2.6094	26 28 22.8	2.028
11	19 9 55.95	2.6104	26 26 15.7	2.208
12	19 12 32.60	2.6113	26 23 57.8	2.388
13	19 15 9.30	2.6121	26 21 29.1	2.569
14	19 17 46.05	2.6127	26 18 49.5	2.749
15	19 20 22.83	2.6132	26 15 59.1	2.930
16	19 22 59.64	2.6135	26 12 57.9	3.111
17	19 25 36.46	2.6138	26 9 45.9	3.291
18	19 28 13.29	2.6139	26 6 23.0	3.472
19	19 30 50.12	2.6138	26 2 49.3	3.652
20	19 33 26.95	2.6136	25 59 4.8	3.832
21	19 36 3.76	2.6133	25 55 9.5	4.012
22	19 38 40.55	2.6128	25 51 3.4	4.192
23	19 41 17.31	2.6123	25 46 46.6	4.371
24	19 43 54.03	2.6116	S.25 42 19.0	4.550

SUNDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 43 54.03	2.6116	S.25 42 19.0	4.550
1	19 46 30.70	2.6108	25 37 40.6	4.729
2	19 49 7.32	2.6098	25 32 51.5	4.907
3	19 51 43.87	2.6087	25 27 51.8	5.084
4	19 54 20.36	2.6075	25 22 41.4	5.262
5	19 56 56.77	2.6061	25 17 20.3	5.440
6	19 59 33.10	2.6046	25 11 48.5	5.617
7	20 2 9.33	2.6030	25 6 6.2	5.793
8	20 4 45.46	2.6013	25 0 13.3	5.969
9	20 7 21.49	2.5995	24 54 9.9	6.144
10	20 9 57.40	2.5976	24 47 56.0	6.319
11	20 12 33.20	2.5956	24 41 31.7	6.493
12	20 15 8.87	2.5934	24 34 56.9	6.666
13	20 17 44.41	2.5911	24 28 11.8	6.838
14	20 20 19.80	2.5887	24 21 16.4	7.010
15	20 22 55.05	2.5862	24 14 10.6	7.181
16	20 25 30.14	2.5836	24 6 54.6	7.351
17	20 28 5.08	2.5809	23 59 28.5	7.520
18	20 30 39.85	2.5781	23 51 52.2	7.688
19	20 33 14.45	2.5752	23 44 5.8	7.856
20	20 35 48.87	2.5722	23 36 9.5	8.022
21	20 38 23.11	2.5692	23 28 3.2	8.187
22	20 40 57.17	2.5660	23 19 46.9	8.351
23	20 43 31.04	2.5628	S.23 11 20.8	8.515

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 46 4.71	2.5594	S.23 2 45.0	8.677
1	20 48 38.18	2.5560	22 53 59.5	8.839
2	20 51 11.43	2.5525	22 45 4.3	9.000
3	20 53 44.48	2.5490	22 35 59.4	9.159
4	20 56 17.31	2.5454	22 26 45.0	9.316
5	20 58 49.92	2.5417	22 17 21.3	9.473
6	21 1 22.31	2.5379	22 7 48.3	9.628
7	21 3 54.46	2.5340	21 58 6.0	9.782
8	21 6 26.39	2.5301	21 48 14.4	9.936
9	21 8 58.08	2.5262	21 38 13.6	10.088
10	21 11 29.53	2.5221	21 28 3.8	10.238
11	21 14 0.73	2.5180	21 17 45.1	10.387
12	21 16 31.69	2.5139	21 7 17.4	10.535
13	21 19 2.40	2.5098	20 56 40.9	10.681
14	21 21 32.86	2.5056	20 45 55.8	10.825
15	21 24 3.07	2.5013	20 35 2.0	10.968
16	21 26 33.01	2.4969	20 23 59.6	11.110
17	21 29 2.69	2.4925	20 12 48.8	11.250
18	21 31 32.11	2.4881	20 1 29.6	11.389
19	21 34 1.27	2.4837	19 50 2.1	11.526
20	21 36 30.16	2.4793	19 38 26.5	11.661
21	21 38 58.79	2.4748	19 26 42.7	11.795
22	21 41 27.14	2.4703	19 14 50.9	11.927
23	21 43 55.23	2.4658	19 2 51.3	12.058
24	21 46 23.04	2.4613	S.18 50 43.9	12.188

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 46 23.04	2.4613	S. 18 50 43.9	12.188
1	21 48 50.58	2.4568	18 38 28.8	12.316
2	21 51 17.85	2.4522	18 26 6.0	12.442
3	21 53 44.84	2.4476	18 13 35.7	12.566
4	21 56 11.56	2.4430	18 0 58.0	12.688
5	21 58 38.00	2.4384	17 48 13.0	12.809
6	22 1 4.17	2.4338	17 35 20.8	12.929
7	22 3 30.06	2.4292	17 22 21.5	13.047
8	22 5 55.67	2.4246	17 9 15.2	13.163
9	22 8 21.01	2.4200	16 56 2.0	13.277
10	22 10 46.07	2.4154	16 42 42.0	13.389
11	22 13 10.86	2.4108	16 29 15.3	13.499
12	22 15 35.37	2.4062	16 15 42.1	13.608
13	22 17 59.61	2.4017	16 2 2.4	13.715
14	22 20 23.57	2.3971	15 48 16.4	13.820
15	22 22 47.26	2.3926	15 34 24.1	13.923
16	22 25 10.68	2.3881	15 20 25.7	14.024
17	22 27 33.83	2.3836	15 6 21.2	14.124
18	22 29 56.71	2.3791	14 52 10.8	14.222
19	22 32 19.32	2.3746	14 37 54.6	14.318
20	22 34 41.66	2.3702	14 23 32.7	14.412
21	22 37 3.74	2.3658	14 9 5.2	14.504
22	22 39 25.56	2.3614	13 54 32.2	14.594
23	22 41 47.11	2.3571	S. 13 39 53.9	14.682

WEDNESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 44 8.41	2.3528	S. 13 25 10.6	14.768
1	22 46 29.45	2.3485	13 10 22.0	14.852
2	22 48 50.23	2.3442	12 55 28.4	14.935
3	22 51 10.75	2.3400	12 40 29.8	15.016
4	22 53 31.03	2.3359	12 25 26.4	15.094
5	22 55 51.06	2.3318	12 10 18.5	15.170
6	22 58 10.84	2.3277	11 55 6.0	15.245
7	23 0 30.38	2.3236	11 39 49.0	15.318
8	23 2 49.67	2.3196	11 24 27.7	15.390
9	23 5 8.72	2.3156	11 9 2.2	15.459
10	23 7 27.54	2.3117	10 53 32.6	15.526
11	23 9 46.13	2.3079	10 37 59.1	15.590
12	23 12 4.49	2.3041	10 22 21.7	15.653
13	23 14 22.62	2.3003	10 6 40.6	15.715
14	23 16 40.53	2.2966	9 50 55.8	15.775
15	23 18 58.21	2.2929	9 35 7.5	15.833
16	23 21 15.68	2.2893	9 19 15.8	15.888
17	23 23 32.94	2.2858	9 3 20.9	15.941
18	23 25 49.98	2.2823	8 47 22.9	15.992
19	23 28 6.81	2.2788	8 31 21.8	16.042
20	23 30 23.44	2.2755	8 15 17.8	16.090
21	23 32 39.87	2.2722	7 59 11.0	16.136
22	23 34 56.10	2.2690	7 43 1.5	16.180
23	23 37 12.14	2.2658	7 26 49.4	16.222
24	23 39 28.00	2.2627	S. 7 10 34.9	16.261

THURSDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 39 28.00	2.2627	S. 7 10 34.9	16.261
1	23 41 43.67	2.2596	6 54 18.1	16.299
2	23 43 59.15	2.2566	6 37 59.0	16.335
3	23 46 14.45	2.2536	6 21 37.8	16.369
4	23 48 29.58	2.2507	6 5 14.6	16.402
5	23 50 44.53	2.2478	5 48 49.6	16.432
6	23 52 59.31	2.2450	5 32 22.8	16.460
7	23 55 13.93	2.2423	5 15 54.4	16.486
8	23 57 28.39	2.2397	4 59 24.4	16.510
9	23 59 42.70	2.2372	4 42 53.0	16.533
10	0 1 56.85	2.2347	4 26 20.3	16.554
11	0 4 10.86	2.2323	4 9 46.5	16.573
12	0 6 24.73	2.2300	3 53 11.6	16.590
13	0 8 38.46	2.2277	3 36 35.7	16.605
14	0 10 52.05	2.2254	3 19 59.0	16.617
15	0 13 5.51	2.2232	3 3 21.6	16.628
16	0 15 18.83	2.2210	2 46 43.6	16.638
17	0 17 32.03	2.2189	2 30 5.1	16.646
18	0 19 45.10	2.2170	2 13 26.1	16.652
19	0 21 58.06	2.2152	1 56 46.8	16.656
20	0 24 10.92	2.2134	1 40 7.5	16.658
21	0 26 23.67	2.2116	1 23 28.1	16.657
22	0 28 36.31	2.2099	1 6 48.7	16.654
23	0 30 48.85	2.2082	S. 0 50 9.5	16.650

FRIDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 33 1.29	2.2067	S. 0 33 30.6	16.644
1	0 35 13.64	2.2052	0 16 52.1	16.637
2	0 37 25.91	2.2038	S. 0 0 14.1	16.628
3	0 39 38.09	2.2024	N. 0 16 23.4	16.617
4	0 41 50.20	2.2011	0 33 0.2	16.604
5	0 44 2.23	2.1999	0 49 36.1	16.589
6	0 46 14.19	2.1988	1 6 11.0	16.573
7	0 48 26.08	2.1977	1 22 44.9	16.556
8	0 50 37.91	2.1967	1 39 17.7	16.537
9	0 52 49.68	2.1958	1 55 49.4	16.516
10	0 55 1 40	2.1949	2 12 19.8	16.492
11	0 57 13.07	2.1941	2 28 48.6	16.466
12	0 59 24.69	2.1934	2 45 15.6	16.439
13	1 1 36.27	2.1927	3 1 41.1	16.410
14	1 3 47.81	2.1921	3 18 4.9	16.380
15	1 5 59.31	2.1915	3 34 26.9	16.349
16	1 8 10.79	2.1910	3 50 47.0	16.315
17	1 10 22.23	2.1905	4 7 4.9	16.279
18	1 12 33.65	2.1902	4 23 20.5	16.242
19	1 14 45.05	2.1899	4 39 33.9	16.203
20	1 16 56.44	2.1897	4 55 45.0	16.164
21	1 19 7.81	2.1895	5 11 53.7	16.123
22	1 21 19.18	2.1894	5 27 59.8	16.079
23	1 23 30.54	2.1893	5 44 3.2	16.034
24	1 25 41.90	2.1893	N. 6 0 3.9	15.988

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 25 41.90	2.1893	N. 6 0 3.9	15.988
1	1 27 53.26	2.1894	6 16 1.8	15.940
2	1 30 4.63	2.1896	6 31 56.6	15.889
3	1 32 16.01	2.1898	6 47 48.4	15.837
4	1 34 27.40	2.1901	7 3 37.0	15.784
5	1 36 38.81	2.1904	7 19 22.4	15.730
6	1 38 50.24	2.1907	7 35 4.6	15.674
7	1 41 1.69	2.1911	7 50 43.4	15.617
8	1 43 13.17	2.1916	8 6 18.6	15.558
9	1 45 24.68	2.1921	8 21 50.1	15.497
10	1 47 36.22	2.1927	8 37 18.0	15.435
11	1 49 47.80	2.1933	8 52 42.1	15.372
12	1 51 59.42	2.1940	9 8 2.4	15.306
13	1 54 11.08	2.1948	9 23 18.7	15.238
14	1 56 22.79	2.1956	9 38 31.0	15.170
15	1 58 34.55	2.1965	9 53 39.1	15.100
16	2 0 46.36	2.1974	10 8 43.0	15.029
17	2 2 58.23	2.1983	10 23 42.6	14.956
18	2 5 10.15	2.1993	10 38 37.9	14.883
19	2 7 22.13	2.2003	10 53 28.7	14.808
20	2 9 34.18	2.2014	11 8 14.9	14.732
21	2 11 46.30	2.2025	11 22 56.4	14.654
22	2 13 58.48	2.2036	11 37 33.2	14.575
23	2 16 10.73	2.2048	N.11 52 5.3	14.494

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 18 23.06	2.2061	N.12 6 32.5	14.412
1	2 20 35.46	2.2074	12 20 54.7	14.329
2	2 22 47.94	2.2087	12 35 11.9	14.245
3	2 25 0.50	2.2101	12 49 24.0	14.159
4	2 27 13.14	2.2115	13 3 30.9	14.071
5	2 29 25.87	2.2130	13 17 32.5	13.982
6	2 31 38.69	2.2145	13 31 28.7	13.892
7	2 33 51.60	2.2160	13 45 19.5	13.801
8	2 36 4.59	2.2175	13 59 4.8	13.709
9	2 38 17.68	2.2190	14 12 44.6	13.616
10	2 40 30.86	2.2205	14 26 18.7	13.522
11	2 42 44.14	2.2221	14 39 47.1	13.426
12	2 44 57.52	2.2238	14 53 9.8	13.329
13	2 47 11.00	2.2255	15 6 26.6	13.231
14	2 49 24.58	2.2272	15 19 37.5	13.132
15	2 51 38.26	2.2289	15 32 42.3	13.031
16	2 53 52.04	2.2306	15 45 41.1	12.929
17	2 56 5.93	2.2323	15 58 33.8	12.826
18	2 58 19.93	2.2341	16 11 20.4	12.723
19	3 0 34.03	2.2359	16 24 0.7	12.618
20	3 2 48.24	2.2378	16 36 34.7	12.512
21	3 5 2.57	2.2396	16 49 2.2	12.405
22	3 7 17.01	2.2415	17 1 23.3	12.297
23	3 9 31.56	2.2434	17 13 37.9	12.188
24	3 11 46.21	2.2453	N.17 25 45.9	12.078

MONDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 11 46.21	2.2453	N.17 25 45.9	12.078
1	3 14 0.98	2.2472	17 37 47.3	11.967
2	3 16 15.86	2.2491	17 49 42.0	11.855
3	3 18 30.86	2.2510	18 1 29.9	11.741
4	3 20 45.97	2.2529	18 13 11.0	11.627
5	3 23 1.20	2.2547	18 24 45.3	11.513
6	3 25 16.54	2.2566	18 36 12.7	11.398
7	3 27 31.99	2.2585	18 47 33.1	11.281
8	3 29 47.56	2.2604	18 58 46.4	11.163
9	3 32 3.24	2.2623	19 9 52.6	11.044
10	3 34 19.03	2.2642	19 20 51.7	10.925
11	3 36 34.94	2.2661	19 31 43.6	10.805
12	3 38 50.97	2.2680	19 42 28.3	10.684
13	3 41 7.11	2.2699	19 53 5.7	10.561
14	3 43 23.36	2.2718	20 3 35.7	10.438
15	3 45 39.72	2.2737	20 13 58.3	10.315
16	3 47 56.19	2.2755	20 24 13.5	10.190
17	3 50 12.77	2.2774	20 34 21.2	10.065
18	3 52 29.47	2.2792	20 44 21.4	9.940
19	3 54 46.28	2.2810	20 54 14.0	9.814
20	3 57 3.19	2.2827	21 3 59.0	9.687
21	3 59 20.20	2.2845	21 13 36.4	9.559
22	4 1 37.32	2.2862	21 23 6.1	9.429
23	4 3 54.54	2.2879	N.21 32 28.0	9.299

TUESDAY, APRIL 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 6 11.86	2.2896	S. 21 41 42.0	9.169

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	5	13	25.0
○ Full Moon, . . .	13	17	44.7
☾ Last Quarter, . .	21	10	19.9
● New Moon, . . .	28	0	54.6

	d	h
☾ Apogee, ...	10	20.7
☾ Perigee, ...	26	10.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P.L. of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
1	Sun	W.	33° 11′ 52″	2533	34° 52′ 19″	2547	36° 32′ 27″	2561	38° 12′ 16″	2576
	Aldebaran	E.	53 49 3	2214	52 0 56	2232	50 13 16	2251	48 26 4	2271
	Pollux	E.	97 45 4	2176	95 56 0	2192	94 7 20	2208	92 19 5	2225
2	Sun	W.	46 25 51	2661	48 3 23	2680	49 40 30	2698	51 17 12	2718
	Aldebaran	E.	39 37 40	2380	37 53 36	2405	36 10 8	2430	34 27 16	2456
	Pollux	E.	83 24 14	2314	81 38 35	2333	79 53 24	2352	78 8 40	2371
	Jupiter	E.	116 9 30	2285	114 23 8	2303	112 37 13	2322	110 51 45	2339
	Regulus	E.	119 39 40	2328	117 54 22	2346	116 9 29	2364	114 25 3	2382
3	Sun	W.	59 14 16	2816	60 48 23	2836	62 22 4	2855	63 55 20	2876
	Aldebaran	E.	26 2 58	2616	24 24 25	2657	22 46 47	2702	21 10 10	2755
	Pollux	E.	69 31 50	2467	67 49 50	2486	66 8 17	2505	64 27 11	2525
	Jupiter	E.	102 11 8	2433	100 28 21	2453	98 46 1	2472	97 4 8	2491
	Regulus	E.	105 49 32	2477	104 7 46	2496	102 26 27	2515	100 45 34	2533
4	Sun	W.	71 35 17	2974	73 6 2	2994	74 36 22	3013	76 6 19	3032
	Venus	W.	25 36 23	3022	27 6 9	3032	28 35 42	3043	30 5 1	3056
	α Arietis	W.	22 4 17	3318	23 28 8	3248	24 53 20	3194	26 19 36	3153
	Pollux	E.	56 8 18	2619	54 29 49	2637	52 51 44	2655	51 14 4	2672
	Jupiter	E.	88 41 16	2583	87 1 58	2601	85 23 5	2619	83 44 36	2637
	Regulus	E.	92 27 38	2626	90 49 19	2644	89 11 24	2662	87 33 53	2680
5	Sun	W.	83 30 20	3122	84 58 3	3139	86 25 25	3156	87 52 27	3172
	Venus	W.	37 27 39	3123	38 55 21	3137	40 22 46	3151	41 49 54	3165
	α Arietis	W.	33 40 14	3052	35 9 22	3046	36 38 38	3041	38 8 0	3039
	Pollux	E.	43 11 36	2760	41 36 15	2776	40 1 16	2792	38 26 38	2808
	Jupiter	E.	75 38 2	2721	74 1 50	2737	72 25 59	2753	70 50 29	2769
	Regulus	E.	79 32 8	2764	77 56 53	2781	76 22 0	2796	74 47 27	2812
6	Sun	W.	95 2 52	3249	96 28 3	3263	97 52 58	3276	99 17 37	3289
	Venus	W.	49 1 33	3230	50 27 7	3242	51 52 26	3254	53 17 31	3265
	α Arietis	W.	45 34 57	3047	47 4 12	3051	48 33 22	3056	50 2 26	3060
	Aldebaran	W.	15 3 55	3270	16 28 41	3216	17 54 31	3176	19 21 9	3147
	Pollux	E.	30 38 35	2885	29 5 57	2900	27 33 38	2914	26 1 37	2928
	Jupiter	E.	62 57 54	2840	61 24 18	2653	59 50 59	2866	58 17 57	2879
	Regulus	E.	66 59 36	2883	65 26 56	2898	63 54 34	2910	62 22 28	2923
7	Sun	W.	106 17 12	3350	107 40 26	3360	109 3 28	3370	110 26 19	3380
	Venus	W.	60 19 43	3319	61 43 33	3327	63 7 13	3336	64 30 43	3345
	α Arietis	W.	57 26 10	3088	58 54 34	3093	60 22 52	3099	61 51 3	3105
	Aldebaran	W.	26 40 14	3091	28 8 34	3088	29 36 58	3087	31 5 23	3087
	Jupiter	E.	50 36 37	2937	49 5 5	2946	47 33 45	2956	46 2 37	2965
	Regulus	E.	54 45 50	2981	53 15 13	2991	51 44 49	3001	50 14 38	3011
	Spica	E.	108 48 56	2977	107 18 15	2986	105 47 45	2996	104 17 27	3004
8	Sun	W.	117 17 54	3423	118 39 45	3430	120 1 28	3437	121 23 3	3443
	Venus	W.	71 25 55	3380	72 48 34	3386	74 11 6	3393	75 33 31	3398
	α Arietis	W.	69 10 23	3129	70 37 58	3133	72 5 27	3138	73 32 51	3142
	Aldebaran	W.	38 27 21	3093	39 55 39	3096	41 23 54	3098	42 52 6	3100
	Jupiter	E.	38 29 54	3010	36 59 54	3019	35 30 5	3026	34 0 25	3034
	Regulus	E.	42 46 37	3056	41 17 33	3064	39 48 39	3072	38 19 55	3079
	Spica	E.	96 48 23	3041	95 19 1	3047	93 49 46	3052	92 20 38	3058
9	Sun	W.	128 9 18	3470	129 30 16	3474	130 51 9	3478	132 11 58	3482

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Sun**	W.	39° 51′ 44″	2592	41° 30′ 50″	2608	43° 9′ 34″	2626	44° 47′ 54″	2643
	Aldebaran	E.	46 39 22	2291	44 53 10	2312	43 7 28	2334	41 22 18	2356
	Pollux	E.	90 31 15	2243	88 43 51	2260	86 56 52	2278	85 10 20	2296
2	**Sun**	W.	52 53 28	2737	54 29 19	2756	56 4 44	2776	57 39 43	2796
	Aldebaran	E.	32 45 1	2484	31 3 25	2514	29 22 31	2545	27 42 21	2580
	Pollux	E.	76 24 23	2390	74 40 34	2409	72 57 12	2428	71 14 17	2448
	Jupiter	E.	109 6 43	2358	107 22 8	2378	105 38 1	2396	103 54 21	2415
	Regulus	E.	112 41 3	2401	110 57 30	2420	109 14 24	2439	107 31 45	2458
3	**Sun**	W.	65 28 10	2895	67 0 35	2916	68 32 34	2935	70 4 8	2955
	Aldebaran	E.	19 34 43	2816	18 0 36	2890	16 28 4	2981	14 57 28	3098
	Pollux	E.	62 46 32	2543	61 6 19	2563	59 26 33	2582	57 47 13	2600
	Jupiter	E.	95 22 42	2510	93 41 42	2528	92 1 8	2546	90 20 59	2565
	Regulus	E.	99 5 7	2553	97 25 7	2571	95 45 32	2589	94 6 22	2608
4	**Sun**	W.	77 35 52	3051	79 5 2	3069	80 33 50	3087	82 2 16	3105
	Venus	W.	31 34 5	3069	33 2 53	3082	34 31 25	3096	35 59 40	3109
	α Arietis	W.	27 46 41	3121	29 14 25	3096	30 42 40	3077	32 11 18	3062
	Pollux	E.	49 36 47	2690	47 59 54	2708	46 23 25	2725	44 47 19	2743
	Jupiter	E.	82 6 31	2655	80 28 50	2672	78 51 32	2688	77 14 36	2704
	Regulus	E.	85 56 46	2697	84 20 2	2715	82 43 42	2732	81 7 44	2748
5	**Sun**	W.	89 19 10	3188	90 45 33	3204	92 11 37	3220	93 37 23	3234
	Venus	W.	43 16 45	3178	44 43 20	3191	46 9 40	3204	47 35 44	3217
	α Arietis	W.	39 37 25	3039	41 6 50	3039	42 36 15	3040	44 5 38	3043
	Pollux	E.	36 52 21	2824	35 18 24	2840	33 44 48	2855	32 11 32	2870
	Jupiter	E.	69 15 20	2784	67 40 31	2798	66 6 0	2812	64 31 48	2826
	Regulus	E.	73 13 15	2827	71 39 22	2842	70 5 48	2856	68 32 33	2870
6	**Sun**	W.	100 42 1	3302	102 6 10	3315	103 30 4	3326	104 53 45	3338
	Venus	W.	54 42 23	3276	56 7 2	3288	57 31 28	3298	58 55 42	3309
	α Arietis	W.	51 31 24	3065	53 0 16	3071	54 29 1	3077	55 57 39	3082
	Aldebaran	W.	20 48 22	3127	22 15 59	3114	23 43 53	3103	25 11 59	3096
	Pollux	E.	24 29 54	2943	22 58 30	2958	21 27 25	2974	19 56 40	2989
	Jupiter	E.	56 45 11	2891	55 12 40	2902	53 40 24	2914	52 8 23	2926
	Regulus	E.	60 50 39	2935	59 19 5	2946	57 47 45	2958	56 16 40	2970
7	**Sun**	W.	111 48 58	3390	113 11 26	3398	114 33 45	3407	115 55 54	3415
	Venus	W.	65 54 3	3352	67 17 14	3360	68 40 16	3368	70 3 9	3374
	α Arietis	W.	63 19 7	3110	64 47 5	3114	66 14 57	3119	67 42 43	3124
	Aldebaran	W.	32 33 49	3087	34 2 14	3088	35 30 38	3090	36 59 0	3091
	Jupiter	E.	44 31 41	2975	43 0 57	2985	41 30 25	2993	40 0 4	3002
	Regulus	E.	48 44 39	3021	47 14 52	3030	45 45 16	3039	44 15 51	3047
	Spica	E.	102 47 19	3012	101 17 21	3020	99 47 33	3027	98 17 54	3034
8	**Sun**	W.	122 44 31	3449	124 5 52	3455	125 27 6	3460	126 48 15	3465
	Venus	W.	76 55 50	3402	78 18 4	3407	79 40 13	3410	81 2 18	3415
	α Arietis	W.	75 0 10	3145	76 27 25	3148	77 54 36	3152	79 21 43	3154
	Aldebaran	W.	44 20 16	3102	45 48 23	3104	47 16 28	3105	48 44 31	3108
	Jupiter	E.	32 30 55	3043	31 1 35	3051	29 32 25	3059	28 3 25	3067
	Regulus	E.	36 51 20	3087	35 22 55	3095	33 54 39	3103	32 26 33	3111
	Spica	E.	90 51 37	3064	89 22 43	3068	87 53 54	3073	86 25 11	3076
9	**Sun**	W.	133 32 42	3485	134 53 23	3488	136 14 0	3491	137 34 34	3494

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Venus	W.	82 24 18	3417	83 46 15	3420	85 8 9	3423	86 30 0	3424
	α Arietis	W.	80 48 47	3158	82 15 47	3160	83 42 44	3163	85 9 38	3164
	Aldebaran	W.	50 12 31	3110	51 40 29	3110	53 8 26	3112	54 36 21	3113
	Spica	E.	84 56 32	3080	83 27 58	3083	81 59 28	3086	80 31 1	3089
	Mars	E.	106 51 50	2115	105 23 59	2118	103 56 11	2120	102 28 26	2123
10	Venus	W.	93 18 48	3430	94 40 31	3431	96 2 13	3430	97 23 56	3430
	Aldebaran	W.	61 55 44	3114	63 23 36	3114	64 51 29	3114	66 19 22	3113
	Pollux	W.	17 42 40	3124	19 10 21	3118	20 38 9	3114	22 6 2	3109
	Spica	E.	73 9 29	3097	71 41 16	3098	70 13 4	3098	68 44 52	3099
	Mars	E.	95 10 11	3128	93 42 35	3128	92 14 59	3128	90 47 23	3127
11	Venus	W.	104 12 45	3423	105 34 36	3421	106 56 29	3418	108 18 25	3415
	Aldebaran	W.	73 39 7	3105	75 7 10	3104	76 35 15	3101	78 3 23	3099
	Pollux	W.	29 26 36	3093	30 54 54	3090	32 23 16	3087	33 51 42	3084
	Spica	E.	61 23 55	3097	59 55 42	3096	58 27 27	3095	56 59 11	3093
	Mars	E.	83 29 5	3119	82 1 19	3118	80 33 31	3116	79 5 41	3114
	Antares	E.	107 15 51	3085	105 47 23	3083	104 18 53	3082	102 50 21	3079
12	Aldebaran	W.	85 24 49	3085	86 53 17	3081	88 21 50	3078	89 50 27	3074
	Pollux	W.	41 14 50	3066	42 43 41	3062	44 12 37	3059	45 41 37	3054
	Spica	E.	49 37 22	3085	48 8 54	3082	46 40 23	3080	45 11 49	3078
	Mars	E.	71 45 36	3097	70 17 23	3093	68 49 5	3089	67 20 42	3085
	Antares	E.	95 26 53	3065	93 58 1	3061	92 29 4	3058	91 0 3	3055
13	Pollux	W.	53 7 59	3032	54 37 32	3026	56 7 12	3022	57 36 57	3017
	Jupiter	W.	21 48 32	3056	23 17 35	3044	24 46 53	3033	26 16 25	3023
	Regulus	W.	17 18 34	3174	18 45 14	3149	20 12 24	3128	21 40 0	3109
	Spica	E.	37 48 24	3069	36 19 36	3068	34 50 47	3066	33 21 56	3065
	Mars	E.	59 57 27	3062	58 28 31	3056	56 59 28	3052	55 30 19	3046
	Antares	E.	83 33 48	3034	82 4 17	3030	80 34 41	3025	79 4 59	3019
14	Pollux	W.	65 7 22	2990	66 37 47	2984	68 8 20	2978	69 39 0	2972
	Jupiter	W.	33 46 57	2980	35 17 35	2973	36 48 22	2965	38 19 19	2958
	Regulus	W.	29 2 55	3042	30 32 16	3031	32 1 50	3021	33 31 37	3012
	Mars	E.	48 2 50	3017	46 32 58	3011	45 2 59	3005	43 32 52	2999
	Antares	E.	71 34 54	2994	70 4 34	2989	68 34 7	2982	67 3 32	2977
15	Pollux	W.	77 14 16	2941	78 45 43	2935	80 17 18	2927	81 49 2	2921
	Jupiter	W.	45 56 21	2922	47 28 12	2914	49 0 13	2907	50 32 23	2899
	Regulus	W.	41 3 19	2969	42 34 11	2960	44 5 14	2952	45 36 27	2943
	Mars	E.	36 0 18	2965	34 29 22	2958	32 58 17	2952	31 27 4	2945
	Antares	E.	59 28 51	2947	57 57 32	2942	56 26 6	2935	54 54 32	2928
	Saturn	E.	111 4 42	2981	109 34 6	2974	108 3 21	2968	106 32 28	2961
16	Pollux	W.	89 29 52	2885	91 2 30	2878	92 35 17	2870	94 8 14	2863
	Jupiter	W.	58 15 36	2862	59 48 44	2854	61 22 2	2847	62 55 29	2839
	Regulus	W.	53 15 9	2903	54 47 24	2894	56 19 50	2886	57 52 27	2878
	Antares	E.	47 14 39	2897	45 42 16	2890	44 9 44	2883	42 37 4	2876
	α Aquilæ	E.	96 8 35	3697	94 51 45	3686	93 34 43	3676	92 17 30	3666
	Saturn	E.	98 55 47	2924	97 23 58	2916	95 52 0	2909	94 19 53	2901
17	Pollux	W.	101 55 27	2823	103 29 25	2815	105 3 34	2806	106 37 54	2797
	Jupiter	W.	70 45 19	2798	72 19 49	2790	73 54 30	2782	75 29 22	2772
	Regulus	W.	65 38 10	2835	67 11 52	2827	68 45 45	2818	70 19 50	2809

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Venus	W.	87° 51′ 49″	3426	89° 13′ 36″	3428	90° 35′ 21″	3429	91° 57′ 5″	3430
	α Arietis	W.	86 36 30	3167	88 3 19	3168	89 30 7	3169	90 56 53	3170
	Aldebaran	W.	56 4 15	3114	57 32 8	3114	59 0 0	3114	60 27 52	3114
	Spica	E.	79 2 38	3091	77 34 17	3093	76 5 59	3095	74 37 43	3096
	Mars	E.	101 0 44	3124	99 33 4	3125	98 5 25	3127	96 37 48	3127
10	Venus	W.	98 45 39	3429	100 7 23	3427	101 29 9	3426	102 50 56	3424
	Aldebaran	W.	67 47 16	3112	69 15 11	3110	70 43 8	3110	72 11 6	3107
	Pollux	W.	23 34 1	3105	25 2 4	3102	26 30 11	3099	27 58 22	3096
	Spica	E.	67 16 41	3099	65 48 30	3099	64 20 19	3098	62 52 7	3098
	Mars	E.	89 19 46	3126	87 52 8	3125	86 24 29	3124	84 56 48	3122
11	Venus	W.	109 40 24	3413	111 2 26	3410	112 24 31	3407	113 46 40	3404
	Aldebaran	W.	79 31 34	3097	80 59 47	3094	82 28 4	3091	83 56 25	3088
	Pollux	W.	35 20 11	3081	36 48 44	3077	38 17 22	3073	39 46 4	3070
	Spica	E.	55 30 53	3092	54 2 34	3090	52 34 12	3088	51 5 48	3087
	Mars	E.	77 37 48	3110	76 9 51	3107	74 41 50	3104	73 13 45	3101
	Antares	E.	101 21 46	3077	99 53 8	3074	98 24 27	3071	96 55 42	3068
12	Aldebaran	W.	91 19 8	3070	92 47 54	3066	94 16 45	3062	95 45 41	3058
	Pollux	W.	47 10 43	3050	48 39 54	3046	50 9 10	3041	51 38 32	3037
	Spica	E.	43 43 13	3076	42 14 34	3074	40 45 53	3073	39 17 10	3070
	Mars	E.	65 52 14	3081	64 23 41	3076	62 55 2	3071	61 26 17	3067
	Antares	E.	89 30 58	3051	88 1 48	3047	86 32 33	3043	85 3 13	3039
13	Pollux	W.	59 6 49	3012	60 36 47	3006	62 6 52	3000	63 37 4	2996
	Jupiter	W.	27 46 9	3014	29 16 5	3005	30 46 12	2997	32 16 29	2988
	Regulus	W.	23 7 59	3092	24 36 18	3078	26 4 55	3065	27 33 48	3053
	Spica	E.	31 53 4	3065	30 24 12	3065	28 55 20	3066	27 26 29	3069
	Mars	E.	54 1 3	3041	52 31 41	3035	51 2 12	3020	49 32 35	3022
	Antares	E.	77 35 10	3015	76 5 16	3009	74 35 15	3005	73 5 8	2999
14	Pollux	W.	71 9 48	2966	72 40 43	2960	74 11 46	2954	75 42 57	2947
	Jupiter	W.	39 50 25	2950	41 21 40	2942	42 53 5	2935	44 24 39	2929
	Regulus	W.	35 1 35	3003	36 31 44	2993	38 2 5	2365	39 32 37	2977
	Mars	E.	42 2 38	2993	40 32 16	2985	39 1 45	2979	37 31 6	2972
	Antares	E.	65 32 50	2971	64 2 1	2965	62 31 5	2960	61 0 2	2954
15	Pollux	W.	83 20 54	2914	84 52 55	2907	86 25 5	2900	87 57 24	2893
	Jupiter	W.	52 4 43	2892	53 37 12	2885	55 9 50	2877	56 42 38	2869
	Regulus	W.	47 7 51	2935	48 39 25	2927	50 11 9	2919	51 43 4	2911
	Mars	E.	29 55 42	2938	28 24 11	2931	26 52 31	2923	25 20 41	2916
	Antares	E.	53 22 49	2922	51 50 58	2916	50 19 0	2910	48 46 54	2903
	Saturn	E.	105 1 26	2954	103 30 15	2946	101 58 55	2939	100 27 26	2931
16	Pollux	W.	95 41 20	2855	97 14 36	2847	98 48 3	2839	100 21 40	2331
	Jupiter	W.	64 29 6	2831	66 2 53	2823	67 36 51	2815	69 11 0	2807
	Regulus	W.	59 25 14	2869	60 58 12	2862	62 31 20	2853	64 4 39	2844
	Antares	E.	41 4 15	2870	39 31 18	2863	37 58 12	2857	36 24 58	2850
	α Aquilæ	E.	91 0 7	3658	89 42 35	3650	88 24 55	3644	87 7 8	3638
	Saturn	E.	92 47 36	2893	91 15 8	2885	89 42 30	2877	88 9 42	2869
17	Pollux	W.	108 12 26	2788	109 47 9	2779	111 22 4	2771	112 57 10	2761
	Jupiter	W.	77 4 26	2764	78 39 41	2755	80 15 8	2746	81 50 47	2736
	Regulus	W.	71 54 6	2800	73 28 34	2790	75 3 15	2781	76 38 8	2772

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Antares	E.	34° 51′ 35″	2844	33° 18′ 4″	2838	31° 44′ 25″	2831	30° 10′ 38″	2826
	α Aquilæ	E.	85 49 15	3633	84 31 16	3629	83 13 13	3626	81 55 7	3623
	Saturn	E.	86 36 43	2860	85 3 33	2852	83 30 13	2844	81 56 42	2835
18	Jupiter	W.	83 26 39	2727	85 2 43	2718	86 38 59	2708	88 15 28	2698
	Regulus	W.	78 13 13	2762	79 48 31	2752	81 24 2	2742	82 59 46	2732
	Spica	W.	24 23 6	2835	25 56 48	2815	27 30 56	2798	29 5 27	2781
	Saturn	E.	74 6 11	2789	72 31 29	2780	70 56 35	2770	69 21 28	2760
	α Aquilæ	E.	75 24 22	3629	74 6 19	3633	72 48 21	3639	71 30 29	3647
	Sun	E.	131 40 47	3123	130 13 5	3111	128 45 9	3100	127 16 59	3087
19	Jupiter	W.	96 21 16	2647	97 59 7	2636	99 37 13	2626	101 15 33	2615
	Regulus	W.	91 1 50	2680	92 38 57	2669	94 16 19	2658	95 53 55	2646
	Spica	W.	37 3 11	2707	38 39 42	2693	40 16 31	2680	41 53 38	2666
	Saturn	E.	61 22 37	2710	59 46 10	2699	58 9 29	2689	56 32 34	2678
	α Aquilæ	E.	65 3 47	3711	63 47 12	3730	62 30 57	3751	61 15 4	3776
	Sun	E.	119 52 30	3028	118 22 52	3015	116 52 58	3003	115 22 49	2990
20	Spica	W.	50 3 43	2599	51 42 39	2586	53 21 53	2573	55 1 25	2559
	Mars	W.	27 5 35	2583	28 44 54	2570	30 24 30	2556	32 4 25	2543
	Saturn	E.	48 24 24	2624	46 46 2	2613	45 7 25	2602	43 28 33	2592
	α Aquilæ	E.	55 3 8	3951	53 50 40	4000	52 39 0	4054	51 28 14	4115
	Sun	E.	107 48 1	2925	106 16 14	2911	104 44 9	2898	103 11 47	2884
21	Spica	W.	63 23 45	2492	65 5 9	2479	66 46 52	2465	68 28 55	2451
	Mars	W.	40 28 36	2476	42 10 23	2462	43 52 29	2449	45 34 54	2435
	Saturn	E.	35 10 36	2540	33 30 19	2531	31 49 49	2522	30 9 7	2515
	α Aquilæ	E.	45 51 15	4546	44 48 3	4665	43 46 34	4800	42 46 58	4954
	Sun	E.	95 25 33	2815	93 51 24	2800	92 16 56	2785	90 42 9	2771
22	Spica	W.	77 3 58	2383	78 47 57	2369	80 32 16	2356	82 16 54	2343
	Mars	W.	54 11 57	2365	55 56 22	2352	57 41 6	2338	59 26 10	2324
	Antares	W.	31 10 53	2394	32 54 36	2379	34 38 41	2363	36 23 9	2348
	Sun	E.	82 43 30	2699	81 6 49	2685	79 29 49	2671	77 52 30	2657
23	Spica	W.	91 4 52	2278	92 51 24	2265	94 38 15	2253	96 25 24	2241
	Mars	W.	68 16 29	2258	70 3 31	2244	71 50 53	2231	73 38 35	2218
	Antares	W.	45 10 46	2277	46 57 19	2264	48 44 12	2251	50 31 24	2237
	Sun	E.	69 41 7	2588	68 1 55	2574	66 22 24	2561	64 42 35	2548
24	Mars	W.	82 41 39	2159	84 31 8	2148	86 20 54	2137	88 10 56	2127
	Antares	W.	59 32 5	2178	61 21 6	2167	63 10 23	2157	64 59 55	2147
	Sun	E.	56 19 11	2489	54 37 42	2477	52 55 57	2467	51 13 58	2458
25	Mars	W.	97 24 47	2083	99 16 12	2075	101 7 49	2068	102 59 37	2062
	Sun	E.	42 40 51	2417	40 57 41	2412	39 14 23	2406	37 30 57	2402
30	Sun	W.	26 33 29	2655	28 11 9	2669	29 48 31	2682	31 25 35	2697
	Pollux	E.	75 23 54	2302	73 37 57	2317	71 52 23	2334	70 7 13	2351
	Jupiter	E.	105 37 2	2291	103 50 49	2307	102 5 0	2324	100 19 36	2341
31	Sun	W.	39 25 40	2780	41 0 34	2798	42 35 4	2817	44 9 10	2835
	Pollux	E.	61 27 36	2439	59 44 57	2457	58 2 43	2475	56 20 55	2493
	Jupiter	E.	91 38 44	2428	89 55 49	2446	88 13 20	2464	86 31 16	2482
	Regulus	E.	97 47 52	2449	96 5 27	2467	94 23 27	2485	92 41 52	2503

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Antares	E.	28° 36′ 44″	2821	27° 2′ 43″	2815	25° 28′ 35″	2811	23° 54′ 22″	2806
	α Aquilæ	E.	80 36 58	3623	79 18 48	3623	78 0 38	3623	76 42 29	3625
	Saturn	E.	80 22 59	2826	78 49 5	2817	77 14 59	2808	75 40 41	2798
18	Jupiter	W.	89 52 11	2688	91 29 7	2678	93 6 16	2668	94 43 39	2657
	Regulus	W.	84 35 44	2722	86 11 55	2712	87 48 19	2701	89 24 57	2690
	Spica	W.	30 40 20	2766	32 15 33	2750	33 51 6	2735	35 26 59	2721
	Saturn	E.	67 46 8	2750	66 10 35	2741	64 34 49	2731	62 58 50	2720
	α Aquilæ	E.	70 12 45	3657	68 55 12	3667	67 37 50	3679	66 20 41	3694
	Sun	E.	125 48 34	3076	124 19 55	3064	122 51 1	3052	121 21 53	3040
19	Jupiter	W.	102 54 8	2604	104 32 58	2593	106 12 3	2581	107 51 24	2569
	Regulus	W.	97 31 47	2635	99 9 54	2624	100 48 17	2612	102 26 55	2601
	Spica	W.	43 31 3	2653	45 8 46	2640	46 46 47	2626	48 25 6	2613
	Saturn	E.	54 55 25	2668	53 18 2	2657	51 40 24	2646	50 2 31	2635
	α Aquilæ	E.	59 59 37	3803	58 44 38	3834	57 30 11	3869	56 16 20	3908
	Sun	E.	113 52 24	2977	112 21 43	2964	110 50 45	2951	109 19 31	2939
20	Spica	W.	56 41 16	2546	58 21 25	2533	60 1 53	2519	61 42 40	2506
	Mars	W.	33 44 38	2530	35 25 9	2517	37 5 59	2503	38 47 8	2489
	Saturn	E.	41 49 27	2581	40 10 6	2570	38 30 30	2560	36 50 40	2550
	α Aquilæ	E.	50 18 27	4183	49 9 45	4259	48 2 14	4343	46 56 1	4439
	Sun	E.	101 39 8	2870	100 6 11	2857	98 32 57	2842	96 59 24	2828
21	Spica	W.	70 11 17	2438	71 53 58	2424	73 36 59	2410	75 20 19	2397
	Mars	W.	47 17 39	2421	49 0 44	2408	50 44 8	2394	52 27 52	2379
	Saturn	E.	28 28 14	2508	26 47 12	2502	25 6 2	2499	23 24 47	2497
	α Aquilæ	E.	41 49 26	5125	40 54 8	5320	40 1 16	5541	39 11 1	5798
	Sun	E.	89 7 3	2756	87 31 38	2743	85 55 55	2728	84 19 52	2713
22	Spica	W.	84 1 51	2329	85 47 8	2316	87 32 44	2303	89 18 39	2291
	Mars	W.	61 11 34	2311	62 57 18	2297	64 43 22	2283	66 29 46	2270
	Antares	W.	38 7 58	2334	39 53 8	2319	41 38 40	2304	43 24 33	2291
	Sun	E.	76 14 52	2642	74 36 54	2628	72 58 37	2614	71 20 1	2601
23	Spica	W.	98 12 51	2229	100 0 35	2217	101 48 37	2206	103 36 56	2195
	Mars	W.	75 26 36	2206	77 14 55	2194	79 3 32	2181	80 52 27	2170
	Antares	W.	52 18 56	2225	54 6 46	2212	55 54 55	2201	57 43 21	2189
	Sun	E.	63 2 28	2535	61 22 4	2523	59 41 23	2511	58 0 25	2499
24	Mars	W.	90 1 14	2117	91 51 47	2108	93 42 34	2099	95 33 34	2091
	Antares	W.	66 49 43	2137	68 39 45	2128	70 30 2	2119	72 20 32	2111
	Sun	E.	49 31 45	2448	47 49 19	2440	46 6 41	2431	44 23 51	2424
25	Mars	W.	104 51 34	2057	106 43 40	2051	108 35 55	2046	110 28 17	2042
	Sun	E.	35 47 25	2398	34 3 48	2396	32 20 7	2394	30 36 24	2394
30	Sun	W.	33 2 19	2713	34 38 42	2729	36 14 44	2746	37 50 23	2763
	Pollux	E.	68 22 28	2368	66 38 8	2385	64 54 12	2403	63 10 41	2421
	Jupiter	E.	98 34 36	2358	96 50 1	2375	95 5 56	2392	93 22 4	2410
31	Sun	W.	45 42 53	2853	47 16 12	2872	48 49 7	2891	50 21 38	2910
	Pollux	E.	54 39 32	2512	52 58 35	2530	51 18 4	2549	49 37 59	2567
	Jupiter	E.	84 49 38	2500	83 8 25	2519	81 27 38	2537	79 47 16	2556
	Regulus	E.	91 0 43	2521	89 19 59	2539	87 39 40	2557	85 59 46	2575

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	0 43 31.63	9.100	N. 4 40 59.0	57.79	16 1.92	64.51	3 51.94	0.754
Wed.	2	0 47 10.11	9.105	5 4 3.2	57.56	16 1.65	64.53	3 33.91	0.749
Thur.	3	0 50 48.70	9.110	5 27 2.0	57.33	16 1.38	64.55	3 15.98	0.744
Frid.	4	0 54 27.41	9.116	5 49 55.0	57.09	16 1.11	64.57	2 58.19	0.739
Sat.	5	0 58 6.27	9.122	6 12 41.8	56.82	16 0.84	64.60	2 40.56	0.732
Sun.	6	1 1 45.31	9.129	6 35 22.0	56.54	16 0.57	64.63	2 23.10	0.725
Mon.	7	1 5 24.55	9.138	6 57 55.3	56.25	16 0.30	64.66	2 5.82	0.716
Tues.	8	1 9 4.00	9.147	7 20 21.5	55.94	16 0.03	64.69	1 48.76	0.707
Wed.	9	1 12 43.69	9.157	7 42 40.2	55.62	15 59.76	64.73	1 31.95	0.696
Thur.	10	1 16 23.63	9.168	8 4 50.9	55.28	15 59.49	64.77	1 15.38	0.686
Frid.	11	1 20 3.83	9.180	8 26 53.6	54.94	15 59.22	64.81	0 59.07	0.674
Sat.	12	1 23 44.32	9.193	8 48 47.5	54.57	15 58.95	64.85	0 43.05	0.661
Sun.	13	1 27 25.12	9.207	9 10 32.6	54.20	15 58.68	64.90	0 27.35	0.647
Mon.	14	1 31 6.26	9.221	9 32 8.9	53.82	15 58.41	64.95	0 11.98	0.633
Tues.	15	1 34 47.76	9.236	9 53 35.8	53.42	15 58.14	65.00	0 3.04	0.618
Wed.	16	1 38 29.62	9.252	10 14 52.9	53.00	15 57.87	65.06	0 17.71	0.603
Thur.	17	1 42 11.87	9.269	10 35 59.9	52.57	15 57.60	65.11	0 31.97	0.586
Frid.	18	1 45 54.52	9.286	10 56 56.7	52.14	15 57.33	65.17	0 45.83	0.569
Sat.	19	1 49 37.58	9.304	11 17 42.7	51.69	15 57.06	65.23	0 59.28	0.551
Sun.	20	1 53 21.07	9.322	11 38 17.7	51.22	15 56.80	65.29	1 12.31	0.533
Mon.	21	1 57 5.02	9.341	11 58 41.4	50.75	15 56.54	65.35	1 24.89	0.514
Tues.	22	2 0 49.43	9.360	12 18 53.5	50.25	15 56.28	65.42	1 37.00	0.495
Wed.	23	2 4 34.31	9.380	12 38 53.7	49.74	15 56.02	65.49	1 48.64	0.475
Thur.	24	2 8 19.67	9.400	12 58 41.2	49.21	15 55.76	65.56	1 59.80	0.455
Frid.	25	2 12 5.51	9.421	13 18 16.3	48.69	15 55.51	65.63	2 10.48	0.434
Sat.	26	2 15 51.85	9.442	13 37 38.3	48.14	15 55.26	65.70	2 20.66	0.413
Sun.	27	2 19 38.71	9.463	13 56 47.1	47.58	15 55.01	65.77	2 30.34	0.392
Mon.	28	2 23 26.06	9.484	14 15 42.1	46.99	15 54.77	65.85	2 39.52	0.371
Tues.	29	2 27 13.92	9.505	14 34 22.9	46.41	15 54.53	65.92	2 48.19	0.350
Wed.	30	2 31 2.29	9.526	14 52 49.3	45.80	15 54.30	66.00	2 56.35	0.329
Thur.	31	2 34 51.19	9.548	N.15 11 1.1	45.17	15 54.07	66.08	3 3.99	0.307

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	THE SUN'S Apparent Declination.	Diff. for 1 hour.	Equation of Time, to be subtracted from / added to Mean Time.	Diff. for 1 hour.	Sidereal Time or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	0 43 31.04	9.102	N. 4 40 55.2	57.80	3 51.99	0.754	0 39 39.05
Wed.	2	0 47 9.55	9.107	5 3 59.7	57.57	3 33.95	0.749	0 43 35.60
Thur.	3	0 50 48.17	9.112	5 26 58.8	57.34	3 16.01	0.744	0 47 32.16
Frid.	4	0 54 26.94	9.117	5 49 52.1	57.10	2 58.23	0.739	0 51 28.71
Sat.	5	0 58 5.85	9.124	6 12 39.2	56.83	2 40.59	0.732	0 55 25.26
Sun.	6	1 1 44.93	9.131	6 35 19.7	56.55	2 23.11	0.725	0 59 21.82
Mon.	7	1 5 24.22	9.140	6 57 53.3	56.26	2 5.85	0.716	1 3 18.37
Tues.	8	1 9 3.72	9.149	7 20 19.8	55.95	1 48.79	0.707	1 7 14.93
Wed.	9	1 12 43.45	9.159	7 42 38.7	55.63	1 31.97	0.696	1 11 11.48
Thur.	10	1 16 23.43	9.170	8 4 49.7	55.29	1 15.40	0.686	1 15 8.03
Frid.	11	1 20 3.66	9.182	8 26 52.6	54.95	0 59.07	0.674	1 19 4.59
Sat.	12	1 23 44.20	9.195	8 48 46.8	54.58	0 43.06	0.661	1 23 1.14
Sun.	13	1 27 25.04	9.209	9 10 32.2	54.21	0 27.34	0.647	1 26 57.70
Mon.	14	1 31 6.23	9.223	9 32 8.6	53.83	0 11.98	0.633	1 30 54.25
Tues.	15	1 34 47.76	9.238	9 53 35.7	53.43	0 3.04	0.618	1 34 50.80
Wed.	16	1 38 29.65	9.253	10 14 53.1	53.01	0 17.71	0.603	1 38 47.36
Thur.	17	1 42 11.94	9.270	10 36 0.4	52.58	0 31.97	0.586	1 42 43.91
Frid.	18	1 45 54.63	9.287	10 56 57.3	52.15	0 45.84	0.569	1 46 40.47
Sat.	19	1 49 37.73	9.305	11 17 43.5	51.70	0 59.29	0.551	1 50 37.02
Sun.	20	1 53 21.25	9.323	11 38 18.7	51.23	1 12.33	0.533	1 54 33.58
Mon.	21	1 57 5.23	9.342	11 58 42.6	50.76	1 24.90	0.514	1 58 30.13
Tues.	22	2 0 49.68	9.361	12 18 55.0	50.26	1 37.01	0.495	2 2 28.69
Wed.	23	2 4 34.59	9.381	12 38 55.2	49.75	1 48.65	0.475	2 6 23.24
Thur.	24	2 8 19.98	9.401	12 58 42.9	49.22	1 59.82	0.455	2 10 19.80
Frid.	25	2 12 5.85	9.422	13 18 18.0	48.70	2 10.50	0.434	2 14 16.35
Sat.	26	2 15 52.22	9.443	13 37 40.2	48.15	2 20.69	0.413	2 18 12.91
Sun.	27	2 19 39.10	9.464	13 56 49.1	47.58	2 30.36	0.392	2 22 9.46
Mon.	28	2 23 26.48	9.485	14 15 44.2	46.99	2 39.54	0.371	2 26 6.02
Tues.	29	2 27 14.36	9.506	14 34 25.1	46.41	2 48.21	0.350	2 30 2.57
Wed.	30	2 31 2.75	9.527	14 52 51.6	45.80	2 56.38	0.329	2 33 59.13
Thur.	31	2 34 51.67	9.549	N. 15 11 3.4	45.17	3 4.01	0.307	2 37 55.68

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. $+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	91	11 50 18.3	50 20.5	147.84	−0.14	0.0000342	+51.4	23 16 31.53
2	92	12 49 25.5	49 27.6	147.75	−0.01	.0001573	51.2	23 12 35.62
3	93	13 48 30.5	48 32.5	147.66	+0.12	.0002799	51.0	23 8 39.71
4	94	14 47 33.2	47 34.1	147.56	0.23	.0004023	50.9	23 4 43.80
5	95	15 46 33.5	46 35.3	147.46	0.33	.0005244	50.9	23 0 47.90
6	96	16 45 31.4	45 33.1	147.36	0.40	.0006463	50.8	22 56 51.99
7	97	17 44 27.0	44 28.6	147.27	0.44	.0007680	50.8	22 52 56.08
8	98	18 43 20.3	43 21.8	147.18	0.45	.0008898	50.8	22 49 0.17
9	99	19 42 11.4	42 12.8	147.09	0.42	.0010117	50.8	22 45 4.27
10	100	20 41 0.4	41 1.6	147.00	0.36	.0011338	50.9	22 41 8.36
11	101	21 39 47.3	39 48.4	146.91	0.28	.0012560	50.9	22 37 12.45
12	102	22 38 32.1	38 33.1	146.83	0.18	.0013783	51.0	22 23 16.54
13	103	23 37 15.0	37 15.9	146.74	+0.06	.0015006	51.0	22 29 20.63
14	104	24 35 55.9	35 56.7	146.66	−0.07	.0016230	51.0	22 25 24.72
15	105	25 34 34.8	34 35.4	146.58	0.20	.0017455	51.0	22 21 28.81
16	106	26 33 11.9	33 12.4	146.51	0.33	.0018679	50.9	22 17 32.90
17	107	27 31 47.4	31 47.8	146.44	0.46	.0019900	50.8	22 13 36.99
18	108	28 30 21.4	30 21.7	146.38	0.57	.0021116	50.6	22 9 41.08
19	109	29 28 53.7	28 53.9	146.31	0.66	.0022327	50.4	22 5 45.17
20	110	30 27 24.3	27 24.3	146.24	0.72	.0023533	50.1	22 1 49.26
21	111	31 25 53.3	25 53.2	146.17	0.74	.0024730	49.7	21 57 53.36
22	112	32 24 20.7	24 20.5	146.10	0.73	.0025919	49.2	21 53 57.45
23	113	33 22 46.5	22 46.2	146.03	0.69	.0027095	48.7	21 50 1.54
24	114	34 21 10.5	21 10.1	145.96	0.63	.0028259	48.2	21 46 5.63
25	115	35 19 32.8	19 32.2	145.89	0.55	.0029408	47.6	21 42 9.72
26	116	36 17 53.4	17 52.7	145.82	0.45	.0030544	47.0	21 38 13.81
27	117	37 16 12.2	16 11.4	145.75	0.32	.0031664	46.3	21 34 17.90
28	118	38 14 29.3	14 28.4	145.68	0.19	.0032768	45.6	21 30 21.99
29	119	39 12 44.6	12 43.5	145.60	−0.06	.0033855	45.0	21 26 26.08
30	120	40 10 58.0	10 56.7	145.52	+0.07	.0034926	44.3	21 22 30.17
31	121	41 9 9.5	9 8.1	145.43	+0.20	0.0035983	43.7	21 18 34.26

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
−9ˢ.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 39.6	15 32.3	57 21.7	−2.26	56 55.0	−2.19	3 34.2	2.21	4.0
2	15 25.3	15 18.7	56 29.3	2.09	56 5.1	1.95	4 27.6	2.24	5.0
3	15 12.6	15 7.0	55 42.6	1.79	55 22.2	1.61	5 21.2	2.22	6.0
4	15 2.1	14 57.8	55 4.0	1.42	54 48.2	1.21	6 14.0	2.17	7.0
5	14 54.2	14 51.3	54 34.9	1.00	54 24.1	0.79	7 5.0	2.07	8.0
6	14 49.0	14 47.4	54 15.9	0.58	54 10.2	−0.37	7 53.6	1.96	9.0
7	14 46.5	14 46.3	54 6.9	−0.17	54 6.0	+0.01	8 39.4	1.86	10.0
8	14 46.7	14 47.6	54 7.3	+0.19	54 10.6	0.36	9 22.9	1.77	11.0
9	14 49.0	14 50.9	54 15.9	0.52	54 23.0	0.66	10 4.8	1.72	12.0
10	14 53.3	14 56.0	54 31.6	0.78	54 41.6	0.88	10 45.8	1.70	13.0
11	14 59.0	15 2.3	54 52.7	0.97	55 4.8	1.04	11 26.7	1.72	14.0
12	15 5.8	15 9.5	55 17.7	1.10	55 31.2	1.15	12 8.6	1.78	15.0
13	15 13.3	15 17.3	55 45.2	1.19	55 59.7	1.22	12 52.5	1.88	16.0
14	15 21.3	15 25.3	56 14.5	1.23	56 29.4	1.24	13 39.3	2.02	17.0
15	15 29.4	15 33.5	56 44.3	1.25	56 59.4	1.25	14 29.8	2.19	18.0
16	15 37.6	15 41.7	57 14.4	1.25	57 29.3	1.24	15 24.2	2.36	19.0
17	15 45.7	15 49.7	57 44.2	1.23	57 59.0	1.22	16 22.1	2.47	20.0
18	15 53.7	15 57.6	58 13.5	1.20	58 27.8	1.18	17 22.0	2.50	21.0
19	16 1.4	16 5.0	58 41.7	1.14	58 55.1	1.09	18 21.9	2.45	22.0
20	16 8.5	16 11.7	59 7.8	1.02	59 19.5	0.94	19 19.9	2.36	23.0
21	16 14.6	16 17.0	59 30.1	0.83	59 39.3	0.69	20 15.1	2.24	24.0
22	16 19.0	16 20.5	59 46.7	0.53	59 52.0	+0.35	21 7.6	2.14	25.0
23	16 21.3	16 21.4	59 54.9	+0.14	59 55.3	−0.08	21 58.1	2.07	26.0
24	16 20.8	16 19.4	59 52.9	−0.32	59 47.6	0.57	22 47.6	2.06	27.0
25	16 17.1	16 14.0	59 39.4	0.81	59 28.2	1.05	23 37.2	2.08	28.0
26	16 10.2	16 5.8	59 14.3	1.27	58 57.8	1.47	δ		29.0
27	16 0.7	15 55.1	58 39.1	1.64	58 18.7	1.77	0 27.9	2.15	0.6
28	15 49.1	15 42.9	57 56.8	1.87	57 34.0	1.92	1 20.3	2.22	1.6
29	15 36.6	15 30.3	57 10.8	1.94	56 47.6	1.92	2 14.2	2.28	2.6
30	15 24.1	15 18.1	56 24.8	1.87	56 2.9	1.77	3 9.0	2.28	3.6
31	15 12.5	15 7.3	55 42.3	−1.65	55 23.3	−1.50	4 3.5	2.24	4.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 6 11.86	2.2896	N.21 41 42.0	9.169
1	4 8 29.29	2.2913	21 50 48.2	9.038
2	4 10 46.81	2.2929	21 59 46.6	8.908
3	4 13 4.43	2.2945	22 8 37.2	8.777
4	4 15 22.15	2.2961	22 17 19.9	8.645
5	4 17 39.96	2.2976	22 25 54.5	8.512
6	4 19 57.86	2.2991	22 34 21.1	8.378
7	4 22 15.85	2.3006	22 42 39.7	8.243
8	4 24 33.93	2.3020	22 50 50.2	8.108
9	4 26 52.09	2.3034	22 58 52.6	7.972
10	4 29 10.34	2.3048	23 6 46.9	7.837
11	4 31 28.67	2.3061	23 14 33.1	7.701
12	4 33 47.07	2.3074	23 22 11.0	7.564
13	4 36 5.55	2.3086	23 29 40.7	7.427
14	4 38 24.10	2.3098	23 37 2.2	7.289
15	4 40 42.73	2.3110	23 44 15.4	7.151
16	4 43 1.42	2.3121	23 51 20.3	7.012
17	4 45 20.17	2.3131	23 58 16.9	6.873
18	4 47 38.99	2.3141	24 5 5.2	6.734
19	4 49 57.86	2.3150	24 11 45.1	6.595
20	4 52 16.79	2.3159	24 18 16.6	6.455
21	4 54 35.78	2.3168	24 24 39.7	6.315
22	4 56 54.81	2.3176	24 30 54.4	6.175
23	4 59 13.89	2.3183	N.24 37 0.6	6.034

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 1 33.01	2.3190	N.24 42 58.4	5.893
1	5 3 52.17	2.3197	24 48 47.7	5.751
2	5 6 11.37	2.3203	24 54 28.6	5.609
3	5 8 30.60	2.3208	25 0 0.9	5.467
4	5 10 49.86	2.3212	25 5 24.7	5.325
5	5 13 9.14	2.3215	25 10 40.0	5.183
6	5 15 28.44	2.3219	25 15 46.8	5.041
7	5 17 47.76	2.3222	25 20 45.1	4.899
8	5 20 7.10	2.3224	25 25 34.8	4.757
9	5 22 26.45	2.3225	25 30 15.8	4.614
10	5 24 45.80	2.3225	25 34 48.3	4.471
11	5 27 5.15	2.3225	25 39 12.3	4.327
12	5 29 24.50	2.3224	25 43 27.7	4.184
13	5 31 43.84	2.3223	25 47 34.5	4.041
14	5 34 3.18	2.3221	25 51 32.7	3.899
15	5 36 22.50	2.3218	25 55 22.4	3.756
16	5 38 41.80	2.3215	25 59 3.5	3.613
17	5 41 1.08	2.3212	26 2 36.0	3.470
18	5 43 20.34	2.3207	26 5 59.8	3.327
19	5 45 39.57	2.3202	26 9 15.1	3.184
20	5 47 58.76	2.3195	26 12 21.8	3.041
21	5 50 17.91	2.3188	26 15 20.0	2.898
22	5 52 37.02	2.3181	26 18 9.6	2.755
23	5 54 56.08	2.3173	26 20 50.6	2.612
24	5 57 15.09	2.3164	N.26 23 23.1	2.469

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 57 15.09	2.3164	N.26 23 23.1	2.469
1	5 59 34.05	2.3155	26 25 47.0	2.327
2	6 1 52.95	2.3144	26 28 2.3	2.184
3	6 4 11.79	2.3133	26 30 9.1	2.042
4	6 6 30.55	2.3121	26 32 7.4	1.900
5	6 8 49.24	2.3108	26 33 57.2	1.759
6	6 11 7.85	2.3095	26 35 38.5	1.618
7	6 13 26.38	2.3082	26 37 11.3	1.477
8	6 15 44.83	2.3067	26 38 35.7	1.336
9	6 18 3.19	2.3052	26 39 51.6	1.195
10	6 20 21.45	2.3036	26 40 59.1	1.054
11	6 22 39.62	2.3020	26 41 58.2	0.914
12	6 24 57.69	2.3002	26 42 48.8	0.773
13	6 27 15.65	2.2984	26 43 31.0	0.633
14	6 29 33.50	2.2965	26 44 4.9	0.494
15	6 31 51.24	2.2946	26 44 30.4	0.356
16	6 34 8.85	2.2926	26 44 47.6	0.217
17	6 36 26.34	2.2905	26 44 56.5	+0.079
18	6 38 43.71	2.2884	26 44 57.1	−0.059
19	6 41 0.95	2.2863	26 44 49.4	0.196
20	6 43 18.06	2.2840	26 44 33.5	0.333
21	6 45 35.03	2.2816	26 44 9.4	0.470
22	6 47 51.85	2.2792	26 43 37.1	0.606
23	6 50 8.52	2.2767	N.26 42 56.7	0.742

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 52 25.05	2.2742	N.26 42 8.1	0.877
1	6 54 41.43	2.2717	26 41 11.4	1.012
2	6 56 57.65	2.2690	26 40 6.6	1.146
3	6 59 13.71	2.2663	26 38 53.8	1.280
4	7 1 29.60	2.2635	26 37 33.0	1.413
5	7 3 45.32	2.2606	26 36 4.2	1.546
6	7 6 0.87	2.2577	26 34 27.4	1.679
7	7 8 16.25	2.2548	26 32 42.7	1.811
8	7 10 31.45	2.2518	26 30 50.1	1.942
9	7 12 46.47	2.2488	26 28 49.6	2.073
10	7 15 1.31	2.2458	26 26 41.3	2.203
11	7 17 15.96	2.2427	26 24 25.2	2.333
12	7 19 30.43	2.2395	26 22 1.3	2.462
13	7 21 44.70	2.2362	26 19 29.7	2.591
14	7 23 58.77	2.2329	26 16 50.4	2.719
15	7 26 12.64	2.2295	26 14 3.4	2.846
16	7 28 26.31	2.2261	26 11 8.8	2.973
17	7 30 39.77	2.2227	26 8 6.6	3.099
18	7 32 53.03	2.2193	26 4 56.9	3.224
19	7 35 6.08	2.2158	26 1 39.7	3.349
20	7 37 18.92	2.2122	25 58 15.0	3.474
21	7 39 31.54	2.2086	25 54 42.8	3.598
22	7 41 43.95	2.2049	25 51 3.2	3.721
23	7 43 56.13	2.2012	25 47 16.3	3.843
24	7 46 8.09	2.1975	N.25 43 22.1	3.965

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					**MONDAY 7.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 46 8.09	2.1975	N.25 43 22.1	3.965	0	9 26 57.61	2.0020	N.20 26 33.0	8.949
1	7 48 19.82	2.1937	25 39 20.6	4.086	1	9 28 57.61	1.9981	20 17 33.4	9.035
2	7 50 31.33	2.1900	25 35 11.9	4.207	2	9 30 57.38	1.9942	20 8 28.8	9.119
3	7 52 42.61	2.1862	25 30 55.9	4.327	3	9 32 56.91	1.9903	19 59 19.1	9.203
4	7 54 53.67	2.1824	25 26 32.8	4.445	4	9 34 56.21	1.9864	19 50 4.4	9.286
5	7 57 4.50	2.1785	25 22 2.6	4.563	5	9 36 55.28	1.9826	19 40 44.8	9.368
6	7 59 15.09	2.1746	25 17 25.3	4.680	6	9 38 54.12	1.9788	19 31 20.2	9.450
7	8 1 25.44	2.1706	25 12 41.0	4.797	7	9 40 52.73	1.9749	19 21 50.7	9.531
8	8 3 35.56	2.1667	25 7 49.7	4.913	8	9 42 51.11	1.9712	19 12 16.4	9.610
9	8 5 45.44	2.1627	25 2 51.4	5.029	9	9 44 49.27	1.9675	19 2 37.4	9.689
10	8 7 55.08	2.1587	24 57 46.2	5.143	10	9 46 47.21	1.9638	18 52 53.6	9.768
11	8 10 4.48	2.1546	24 52 34.2	5.256	11	9 48 44.93	1.9602	18 43 5.1	9.847
12	8 12 13.63	2.1506	24 47 15.5	5.369	12	9 50 42.43	1.9565	18 33 12.0	9.924
13	8 14 22.54	2.1465	24 41 50.0	5.482	13	9 52 39.71	1.9529	18 23 14.3	10.000
14	8 16 31.21	2.1424	24 36 17.7	5.594	14	9 54 36.78	1.9493	18 13 12.0	10.075
15	8 18 39.63	2.1383	24 30 38.6	5.706	15	9 56 33.64	1.9458	18 3 5.2	10.150
16	8 20 47.81	2.1342	24 24 52.9	5.816	16	9 58 30.28	1.9423	17 52 54.0	10.224
17	8 22 55.74	2.1300	24 19 0.6	5.926	17	10 0 26.71	1.9388	17 42 38.3	10.298
18	8 25 3.41	2.1259	24 13 1.8	6.034	18	10 2 22.94	1.9354	17 32 18.3	10.371
19	8 27 10.84	2.1218	24 6 56.5	6.149	19	10 4 18.96	1.9320	17 21 53.9	10.443
20	8 29 18.02	2.1177	24 0 44.7	6.249	20	10 6 14.78	1.9287	17 11 25.3	10.514
21	8 31 24.95	2.1135	23 54 26.4	6.356	21	10 8 10.40	1.9254	17 0 52.4	10.584
22	8 33 31.63	2.1093	23 48 1.8	6.462	22	10 10 5.83	1.9222	16 50 15.3	10.653
23	8 35 38.06	2.1051	N.23 41 30.9	6.568	23	10 12 1.07	1.9190	N.16 39 34.6	10.722
SUNDAY 6.					**TUESDAY 8.**				
0	8 37 44.24	2.1009	N.23 34 53.7	6.673	0	10 13 56.11	1.9158	N.16 28 48.6	10.790
1	8 39 50.17	2.0967	23 28 10.2	6.777	1	10 15 50.96	1.9126	16 17 59.1	10.858
2	8 41 55.84	2.0925	23 21 20.6	6.879	2	10 17 45.62	1.9095	16 7 5.7	10.924
3	8 44 1.27	2.0883	23 14 24.8	6.981	3	10 19 40.10	1.9064	15 56 8.3	10.990
4	8 46 6.44	2.0841	23 7 22.9	7.082	4	10 21 34.39	1.9034	15 45 6.9	11.055
5	8 48 11.36	2.0799	23 0 14.9	7.183	5	10 23 28.50	1.9004	15 34 1.7	11.119
6	8 50 16.03	2.0757	22 53 0.9	7.283	6	10 25 22.44	1.8975	15 22 52.6	11.183
7	8 52 20.44	2.0715	22 45 40.9	7.382	7	10 27 16.20	1.8946	15 11 39.7	11.246
8	8 54 24.61	2.0673	22 38 15.0	7.480	8	10 29 9.79	1.8918	15 0 23.1	11.309
9	8 56 28.52	2.0632	22 30 43.3	7.577	9	10 31 3.21	1.8890	14 49 2.7	11.371
10	8 58 32.19	2.0590	22 23 5.7	7.674	10	10 32 56.47	1.8863	14 37 38.6	11.431
11	9 0 35.61	2.0549	22 15 22.4	7.770	11	10 34 49.56	1.8836	14 26 10.9	11.491
12	9 2 38.78	2.0507	22 7 33.3	7.865	12	10 36 42.50	1.8809	14 14 39.7	11.550
13	9 4 41.70	2.0466	21 59 38.5	7.960	13	10 38 35.28	1.8783	14 3 4.9	11.609
14	9 6 44.37	2.0424	21 51 38.0	8.053	14	10 40 27.90	1.8758	13 51 26.6	11.666
15	9 8 46.80	2.0383	21 43 32.0	8.146	15	10 42 20.37	1.8733	13 39 44.9	11.723
16	9 10 48.97	2.0342	21 35 20.4	8.239	16	10 44 12.69	1.8708	13 27 59.8	11.780
17	9 12 50.90	2.0301	21 27 3.3	8.331	17	10 46 4.86	1.8683	13 16 11.3	11.836
18	9 14 52.58	2.0260	21 18 40.7	8.422	18	10 47 56.89	1.8660	13 4 19.4	11.892
19	9 16 54.02	2.0220	21 10 12.7	8.512	19	10 49 48.78	1.8637	12 52 24.2	11.947
20	9 18 55.22	2.0179	21 1 39.3	8.601	20	10 51 40.53	1.8615	12 40 25.9	12.000
21	9 20 56.17	2.0139	20 53 0.6	8.689	21	10 53 32.15	1.8593	12 28 24.4	12.052
22	9 22 56.89	2.0099	20 44 16.6	8.776	22	10 55 23.64	1.8571	12 16 19.7	12.104
23	9 24 57.37	2.0060	20 35 27.4	8.863	23	10 57 15.00	1.8549	12 4 11.9	12.155
24	9 26 57.61	2.0020	N.20 26 33.0	8.949	24	10 59 6.23	1.8528	N.11 52 1.1	12.206

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 59 6.23	1.8528	N. 11 52 1.1	12.206
1	11 0 57.34	1.8508	11 39 47.2	12.257
2	11 2 48.33	1.8489	11 27 30.4	12.306
3	11 4 39.21	1.8471	11 15 10.6	12.354
4	11 6 29.98	1.8452	11 2 47.9	12.401
5	11 8 20.64	1.8434	10 50 22.4	12.448
6	11 10 11.19	1.8417	10 37 54.1	12.494
7	11 12 1.64	1.8400	10 25 23.0	12.540
8	11 13 51.99	1.8384	10 12 49.2	12.585
9	11 15 42.24	1.8368	10 0 12.8	12.629
10	11 17 32.40	1.8353	9 47 33.7	12.672
11	11 19 22.47	1.8338	9 34 52.1	12.715
12	11 21 12.46	1.8324	9 22 7.9	12.757
13	11 23 2.36	1.8311	9 9 21.2	12.799
14	11 24 52.19	1.8298	8 56 32.1	12.840
15	11 26 41.94	1.8286	8 43 40.5	12.680
16	11 28 31.62	1.8274	8 30 46.6	12.918
17	11 30 21.23	1.8263	8 17 50.4	12.956
18	11 32 10.77	1.8252	8 4 51.9	12.994
19	11 34 0.25	1.8242	7 51 51.2	13.031
20	11 35 49.67	1.8232	7 38 48.3	13.067
21	11 37 39.04	1.8223	7 25 43.2	13.103
22	11 39 28.35	1.8215	7 12 36.0	13.137
23	11 41 17.62	1.8207	N. 6 59 26.8	13.171

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 43 6.84	1.8200	N. 6 46 15.5	13.204
1	11 44 56.02	1.8193	6 33 2.3	13.236
2	11 46 45.16	1.8188	6 19 47.2	13.267
3	11 48 34.28	1.8183	6 6 30.2	13.298
4	11 50 23.36	1.8179	5 53 11.4	13.328
5	11 52 12.42	1.8175	5 39 50.8	13.358
6	11 54 1.46	1.8171	5 26 28.4	13.386
7	11 55 50.47	1.8168	5 13 4.3	13.414
8	11 57 39.47	1.8166	4 59 38.6	13.441
9	11 59 28.46	1.8164	4 46 11.4	13.467
10	12 1 17.44	1.8163	4 32 42.6	13.493
11	12 3 6.42	1.8163	4 19 12.2	13.518
12	12 4 55.39	1.8163	4 5 40.4	13.542
13	12 6 44.37	1.8164	3 52 7.2	13.565
14	12 8 33.35	1.8165	3 38 32.6	13.588
15	12 10 22.35	1.8168	3 24 56.6	13.611
16	12 12 11.36	1.8170	3 11 19.2	13.632
17	12 14 0.38	1.8173	2 57 40.9	13.652
18	12 15 49.43	1.8177	2 44 1.3	13.671
19	12 17 38.56	1.8181	2 30 20.5	13.689
20	12 19 27.60	1.8187	2 16 38.7	13.707
21	12 21 16.74	1.8193	2 2 55.8	13.724
22	12 23 5.91	1.8199	1 49 11.9	13.740
23	12 24 55.12	1.8206	1 35 27.0	13.756
24	12 26 44.38	1.8214	N. 1 21 41.3	13.770

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 26 44.38	1.8214	N. 1 21 41.3	13.770
1	12 28 33.68	1.8222	1 7 54.7	13.784
2	12 30 23.04	1.8231	0 54 7.3	13.796
3	12 32 12.46	1.8241	0 40 19.2	13.808
4	12 34 1.93	1.8251	0 26 30.4	13.819
5	12 35 51.47	1.8262	N. 0 12 40.9	13.829
6	12 37 41.07	1.8273	S. 0 1 9.2	13.839
7	12 39 30.74	1.8285	0 14 59.8	13.848
8	12 41 20.49	1.8298	0 28 50.9	13.856
9	12 43 10.32	1.8312	0 42 42.5	13.863
10	12 45 0.23	1.8326	0 56 34.5	13.869
11	12 46 50.23	1.8341	1 10 26.8	13.875
12	12 48 40.32	1.8356	1 24 19.4	13.879
13	12 50 30.50	1.8372	1 38 12.3	13.882
14	12 52 20.78	1.8389	1 52 5.4	13.884
15	12 54 11.16	1.8406	2 5 58.5	13.886
16	12 56 1.65	1.8424	2 19 51.7	13.887
17	12 57 52.26	1.8443	2 33 45.0	13.887
18	12 59 42.97	1.8462	2 47 38.3	13.886
19	13 1 33.80	1.8482	3 1 31.5	13.884
20	13 3 24.75	1.8503	3 15 24.6	13.881
21	13 5 15.83	1.8524	3 29 17.4	13.878
22	13 7 7.04	1.8546	3 43 10.0	13.873
23	13 8 58.38	1.8568	S. 3 57 2.3	13.868

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 10 49.86	1.8591	S. 4 10 54.3	13.862
1	13 12 41.48	1.8615	4 24 45.9	13.855
2	13 14 33.24	1.8640	4 38 37.0	13.846
3	13 16 25.15	1.8665	4 52 27.5	13.836
4	13 18 17.22	1.8691	5 6 17.5	13.826
5	13 20 9.45	1.8718	5 20 6.9	13.816
6	13 22 1.84	1.8745	5 33 55.6	13.804
7	13 23 54.39	1.8773	5 47 43.5	13.791
8	13 25 47.11	1.8801	6 1 30.6	13.777
9	13 27 40.00	1.8830	6 15 16.9	13.763
10	13 29 33.07	1.8860	6 29 2.3	13.747
11	13 31 26.32	1.8890	6 42 46.6	13.730
12	13 33 19.75	1.8921	6 56 29.9	13.712
13	13 35 13.37	1.8953	7 10 12.1	13.693
14	13 37 7.18	1.8985	7 23 53.1	13.673
15	13 39 1.19	1.9018	7 37 32.9	13.652
16	13 40 55.40	1.9052	7 51 11.4	13.630
17	13 42 49.82	1.9087	8 4 48.5	13.607
18	13 44 44.44	1.9121	8 18 24.3	13.583
19	13 46 39.27	1.9156	8 31 58.6	13.559
20	13 48 34.31	1.9192	8 45 31.3	13.533
21	13 50 29.57	1.9229	8 59 2.4	13.505
22	13 52 25.06	1.9267	9 12 31.8	13.476
23	13 54 20.78	1.9306	9 25 59.5	13.447
24	13 56 16.73	1.9344	S. 9 39 25.5	13.417

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 56 16.73	1.9344	S. 9 39 25.5	13.417
1	13 58 12.91	1.9383	9 52 49.6	13.386
2	14 0 9.32	1.9423	10 6 11.7	13.353
3	14 2 5.97	1.9463	10 19 31.9	13.320
4	14 4 2.88	1.9505	10 32 50.0	13.285
5	14 6 0.03	1.9547	10 46 5.9	13.248
6	14 7 57.44	1.9589	10 59 19.7	13.211
7	14 9 55.10	1.9632	11 12 31.2	13.173
8	14 11 53.02	1.9676	11 25 40.4	13.133
9	14 13 51.21	1.9720	11 38 47.2	13.092
10	14 15 49.66	1.9765	11 51 51.5	13.050
11	14 17 48.38	1.9810	12 4 53.3	13.008
12	14 19 47.38	1.9856	12 17 52.6	12.965
13	14 21 46.65	1.9903	12 30 49.2	12.920
14	14 23 46.21	1.9950	12 43 43.0	12.873
15	14 25 46.05	1.9997	12 56 33.9	12.824
16	14 27 46.17	2.0045	13 9 22.0	12.775
17	14 29 46.59	2.0094	13 22 7.1	12.726
18	14 31 47.30	2.0143	13 34 49.2	12.676
19	14 33 48.31	2.0193	13 47 28.2	12.624
20	14 35 49.62	2.0244	14 0 4.0	12.570
21	14 37 51.24	2.0295	14 12 36.6	12.515
22	14 39 53.16	2.0347	14 25 5.9	12.459
23	14 41 55.40	2.0399	S. 14 37 31.7	12.401

MONDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 43 57.95	2.0451	S. 14 49 54.0	12.343
1	14 46 0.81	2.0503	15 2 12.8	12.283
2	14 48 3.99	2.0557	15 14 28.0	12.222
3	14 50 7.50	2.0612	15 26 39.5	12.160
4	14 52 11.33	2.0667	15 38 47.3	12.096
5	14 54 15.49	2.0722	15 50 51.2	12.031
6	14 56 19.99	2.0777	16 2 51.1	11.965
7	14 58 24.82	2.0833	16 14 47.0	11.898
8	15 0 29.98	2.0889	16 26 38.9	11.830
9	15 2 35.48	2.0946	16 38 26.7	11.760
10	15 4 41.33	2.1003	16 50 10.1	11.688
11	15 6 47.52	2.1060	17 1 49.2	11.615
12	15 8 54.05	2.1118	17 13 23.9	11.542
13	15 11 0.93	2.1177	17 24 54.2	11.467
14	15 13 8.17	2.1235	17 36 19.9	11.390
15	15 15 15.76	2.1294	17 47 41.0	11.312
16	15 17 23.70	2.1353	17 58 57.4	11.233
17	15 19 31.99	2.1413	18 10 9.0	11.152
18	15 21 40.65	2.1473	18 21 15.7	11.071
19	15 23 49.67	2.1533	18 32 17.5	10.988
20	15 25 59.05	2.1594	18 43 14.2	10.903
21	15 28 8.80	2.1655	18 54 5.8	10.817
22	15 30 18.91	2.1716	19 4 52.2	10.730
23	15 32 29.39	2.1778	19 15 33.3	10.641
24	15 34 40.25	2.1840	S. 19 26 9.1	10.551

TUESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 34 40.25	2.1840	S. 19 26 9.1	10.551
1	15 36 51.47	2.1902	19 36 39.5	10.460
2	15 39 3.07	2.1964	19 47 4.3	10.367
3	15 41 15.04	2.2026	19 57 23.4	10.272
4	15 43 27.38	2.2088	20 7 36.9	10.176
5	15 45 40.10	2.2151	20 17 44.6	10.079
6	15 47 53.19	2.2214	20 27 46.5	9.982
7	15 50 6.66	2.2277	20 37 42.5	9.883
8	15 52 20.51	2.2339	20 47 32.4	9.782
9	15 54 34.73	2.2402	20 57 16.2	9.679
10	15 56 49.33	2.2465	21 6 53.8	9.575
11	15 59 4.31	2.2528	21 16 25.1	9.469
12	16 1 19.67	2.2592	21 25 50.1	9.363
13	16 3 35.41	2.2655	21 35 8.7	9.255
14	16 5 51.53	2.2718	21 44 20.7	9.145
15	16 8 8.02	2.2781	21 53 26.1	9.034
16	16 10 24.89	2.2844	22 2 24.9	8.922
17	16 12 42.14	2.2907	22 11 16.9	8.809
18	16 14 59.77	2.2970	22 20 2.0	8.695
19	16 17 17.78	2.3032	22 28 40.2	8.579
20	16 19 36.16	2.3094	22 37 11.4	8.461
21	16 21 54.91	2.3156	22 45 35.5	8.342
22	16 24 14.03	2.3218	22 53 52.4	8.222
23	16 26 33.52	2.3280	S. 23 2 2.0	8.100

WEDNESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 28 53.39	2.3342	S. 23 10 4.4	7.977
1	16 31 13.63	2.3404	23 17 59.4	7.853
2	16 33 34.24	2.3465	23 25 46.8	7.727
3	16 35 55.21	2.3525	23 33 26.6	7.600
4	16 38 16.54	2.3585	23 40 58.8	7.471
5	16 40 38.23	2.3644	23 48 23.2	7.342
6	16 43 0.27	2.3704	23 55 39.8	7.211
7	16 45 22.67	2.3763	24 2 48.5	7.079
8	16 47 45.43	2.3822	24 9 49.2	6.946
9	16 50 8.54	2.3881	24 16 42.0	6.811
10	16 52 32.00	2.3940	24 23 26.7	6.674
11	16 54 55.81	2.3998	24 30 3.1	6.537
12	16 57 19.97	2.4054	24 36 31.1	6.398
13	16 59 44.47	2.4110	24 42 50.8	6.258
14	17 2 9.29	2.4165	24 49 2.2	6.118
15	17 4 34.45	2.4220	24 55 5.1	5.977
16	17 6 59.93	2.4274	25 0 59.5	5.834
17	17 9 25.74	2.4329	25 6 45.2	5.689
18	17 11 51.87	2.4381	25 12 22.1	5.543
19	17 14 18.31	2.4433	25 17 50.3	5.396
20	17 16 45.07	2.4485	25 23 9.7	5.248
21	17 19 12.13	2.4536	25 28 20.1	5.099
22	17 21 39.50	2.4586	25 33 21.6	4.949
23	17 24 7.17	2.4636	25 38 14.1	4.798
24	17 26 35.13	2.4691	S. 25 42 57.4	4.646

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 26 35.13	2.4684	S.25 42 57.4	4.646
1	17 29 3.38	2.4732	25 47 31.6	4.493
2	17 31 31.91	2.4778	25 51 56.5	4.339
3	17 34 0.71	2.4823	25 56 12.2	4.184
4	17 36 29.79	2.4868	26 0 18.6	4.027
5	17 38 59.14	2.4913	26 4 15.5	3.869
6	17 41 28.75	2.4956	26 8 2.8	3.710
7	17 43 58.61	2.4998	26 11 40.6	3.550
8	17 46 28.72	2.5038	26 15 8.9	3.390
9	17 48 59.07	2.5078	26 18 27.7	3.230
10	17 51 29.65	2.5117	26 21 36.8	3.069
11	17 54 0.47	2.5155	26 24 36.1	2.907
12	17 56 31.51	2.5191	26 27 25.6	2.744
13	17 59 2.77	2.5227	26 30 5.3	2.580
14	18 1 34.23	2.5261	26 32 35.1	2.415
15	18 4 5.90	2.5294	26 34 55.0	2.249
16	18 6 37.76	2.5326	26 37 4.9	2.082
17	18 9 9.81	2.5358	26 39 4.8	1.915
18	18 11 42.05	2.5388	26 40 54.7	1.747
19	18 14 14.46	2.5416	26 42 34.5	1.578
20	18 16 47.04	2.5443	26 44 4.1	1.409
21	18 19 19.78	2.5469	26 45 23.6	1.240
22	18 21 52.67	2.5494	26 46 32.9	1.070
23	18 24 25.70	2.5518	S.26 47 32.0	0.900

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 26 58.88	2.5540	S.26 48 20.9	0.729
1	18 29 32.19	2.5561	26 48 59.5	0.557
2	18 32 5.62	2.5581	26 49 27.8	0.385
3	18 34 39.16	2.5599	26 49 45.7	0.213
4	18 37 12.81	2.5616	26 49 53.3	−0.040
5	18 39 46.56	2.5633	26 49 50.5	+0.133
6	18 42 20.40	2.5648	26 49 37.3	0.306
7	18 44 54.33	2.5661	26 49 13.7	0.480
8	18 47 28.33	2.5673	26 48 39.7	0.654
9	18 50 2.40	2.5683	26 47 55.2	0.828
10	18 52 36.53	2.5692	26 47 0.3	1.002
11	18 55 10.71	2.5700	26 45 54.9	1.177
12	18 57 44.93	2.5707	26 44 39.1	1.351
13	19 0 19.19	2.5713	26 43 12.8	1.526
14	19 2 53.48	2.5717	26 41 36.0	1.701
15	19 5 27.79	2.5720	26 39 48.7	1.876
16	19 8 2.11	2.5722	26 37 50.9	2.051
17	19 10 36.44	2.5722	26 35 42.6	2.225
18	19 13 10.77	2.5720	26 33 23.9	2.400
19	19 15 45.09	2.5718	26 30 54.7	2.574
20	19 18 19.38	2.5714	26 28 15.0	2.748
21	19 20 53.65	2.5709	26 25 24.9	2.922
22	19 23 27.89	2.5702	26 22 24.3	3.096
23	19 26 2.08	2.5695	26 19 13.3	3.270
24	19 28 36.23	2.5686	S.26 15 51.9	3.444

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 28 36.23	2.5686	S.26 15 51.9	3.444
1	19 31 10.32	2.5676	26 12 20.1	3.617
2	19 33 44.34	2.5665	26 8 37.9	3.790
3	19 36 18.29	2.5653	26 4 45.2	3.963
4	19 38 52.17	2.5639	26 0 42.2	4.136
5	19 41 25.96	2.5623	25 56 28.9	4.308
6	19 43 59.65	2.5607	25 52 5.3	4.479
7	19 46 33.25	2.5591	25 47 31.4	4.650
8	19 49 6.74	2.5573	25 42 47.3	4.820
9	19 51 40.11	2.5553	25 37 53.0	4.990
10	19 54 13.37	2.5532	25 32 48.5	5.159
11	19 56 46.50	2.5510	25 27 33.9	5.328
12	19 59 19.49	2.5487	25 22 9.1	5.496
13	20 1 52.35	2.5463	25 16 34.2	5.664
14	20 4 25.06	2.5439	25 10 49.3	5.831
15	20 6 57.62	2.5414	25 4 54.5	5.997
16	20 9 30.03	2.5387	24 58 49.7	6.163
17	20 12 2.27	2.5359	24 52 34.9	6.328
18	20 14 34.34	2.5330	24 46 10.2	6.492
19	20 17 6.23	2.5301	24 39 35.7	6.656
20	20 19 37.95	2.5271	24 32 51.5	6.818
21	20 22 9.49	2.5241	24 25 57.6	6.979
22	20 24 40.84	2.5209	24 18 54.0	7.140
23	20 27 11.99	2.5176	S.24 11 40.8	7.300

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 29 42.95	2.5142	S.24 4 18.0	7.459
1	20 32 13.71	2.5108	23 56 45.7	7.617
2	20 34 44.25	2.5072	23 49 4.0	7.774
3	20 37 14.57	2.5036	23 41 12.8	7.931
4	20 39 44.68	2.4999	23 33 12.3	8.086
5	20 42 14.56	2.4962	23 25 2.6	8.240
6	20 44 44.22	2.4924	23 16 43.6	8.392
7	20 47 13.65	2.4886	23 8 15.5	8.544
8	20 49 42.85	2.4847	22 59 38.3	8.695
9	20 52 11.81	2.4808	22 50 52.1	8.845
10	20 54 40.54	2.4767	22 41 57.0	8.993
11	20 57 9.02	2.4726	22 32 52.9	9.141
12	20 59 37.25	2.4685	22 23 40.0	9.287
13	21 2 5.24	2.4643	22 14 18.4	9.432
14	21 4 32.97	2.4601	22 4 48.2	9.576
15	21 7 0.45	2.4559	21 55 9.3	9.718
16	21 9 27.68	2.4516	21 45 21.9	9.859
17	21 11 54.65	2.4473	21 35 26.1	9.999
18	21 14 21.35	2.4429	21 25 22.0	10.138
19	21 16 47.79	2.4385	21 15 9.6	10.276
20	21 19 13.97	2.4341	21 4 48.9	10.413
21	21 21 39.89	2.4297	20 54 20.1	10.548
22	21 24 5.54	2.4253	20 43 43.2	10.681
23	21 26 30.93	2.4208	20 32 58.4	10.813
24	21 28 56.04	2.4163	S.20 22 5.6	10.944

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 21.					WEDNESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 28 56.04	2.4163	S. 20 22 5.6	10.944	0	23 19 55.60	2.2207	S. 9 34 7.5	15.452
1	21 31 20.88	2.4118	20 11 5.0	11.074	1	23 22 8.75	2.2176	9 18 38.7	15.507
2	21 33 45.45	2.4073	19 59 56.8	11.202	2	23 24 21.73	2.2147	9 3 6.8	15.560
3	21 36 9.75	2.4027	19 48 40.9	11.328	3	23 26 34.53	2.2119	8 47 31.7	15.611
4	21 38 33.77	2.3982	19 37 17.4	11.453	4	23 28 47.16	2.2091	8 31 53.6	15.660
5	21 40 57.53	2.3937	19 25 46.5	11.578	5	23 30 59.62	2.2063	8 16 12.5	15.708
6	21 43 21.01	2.3892	19 14 8.1	11.701	6	23 33 11.92	2.2036	8 0 28.6	15.754
7	21 45 44.22	2.3846	19 2 22.4	11.822	7	23 35 24.06	2.2010	7 44 42.0	15.799
8	21 48 7.16	2.3800	18 50 29.5	11.941	8	23 37 36.04	2.1985	7 28 52.8	15.842
9	21 50 29.83	2.3754	18 38 29.5	12.059	9	23 39 47.87	2.1960	7 13 1.0	15.883
10	21 52 52.22	2.3708	18 26 22.4	12.175	10	23 41 59.56	2.1936	6 57 6.8	15.922
11	21 55 14.34	2.3663	18 14 8.4	12.291	11	23 44 11.11	2.1913	6 41 10.3	15.960
12	21 57 36.18	2.3618	18 1 47.5	12.405	12	23 46 22.52	2.1890	6 25 11.6	15.996
13	21 59 57.75	2.3573	17 49 19.8	12.518	13	23 48 33.79	2.1868	6 9 10.8	16.030
14	22 2 19.06	2.3528	17 36 45.5	12.629	14	23 50 44.94	2.1847	5 53 7.9	16.063
15	22 4 40.10	2.3484	17 24 4.5	12.738	15	23 52 55.96	2.1826	5 37 3.1	16.094
16	22 7 0.87	2.3440	17 11 17.0	12.845	16	23 55 6.85	2.1806	5 20 56.5	16.124
17	22 9 21.38	2.3396	16 58 23.1	12.951	17	23 57 17.63	2.1787	5 4 48.2	16.152
18	22 11 41.62	2.3352	16 45 22.9	13.055	18	23 59 28.29	2.1768	4 48 38.3	16.178
19	22 14 1.60	2.3308	16 32 16.5	13.158	19	0 1 38.84	2.1750	4 32 26.0	16.202
20	22 16 21.31	2.3264	16 19 3.9	13.260	20	0 3 49.29	2.1733	4 16 14.0	16.225
21	22 18 40.76	2.3220	16 5 45.3	13.360	21	0 5 59.64	2.1717	3 59 59.8	16.247
22	22 20 59.95	2.3177	15 52 20.7	13.458	22	0 8 9.89	2.1702	3 43 44.4	16.267
23	22 23 18.88	2.3134	S. 15 38 50.3	13.555	23	0 10 20.06	2.1688	S. 3 27 27.8	16.285
	TUESDAY 22.					THURSDAY 24.			
0	22 25 37.56	2.3091	S. 15 25 14.1	13.650	0	0 12 30.14	2.1674	S. 3 11 10.2	16.301
1	22 27 55.98	2.3049	15 11 32.2	13.744	1	0 14 40.14	2.1660	2 54 51.7	16.315
2	22 30 14.15	2.3008	14 57 44.8	13.836	2	0 16 50.06	2.1647	2 38 32.4	16.328
3	22 32 32.07	2.2967	14 43 51.9	13.927	3	0 18 59.90	2.1634	2 22 12.4	16.339
4	22 34 49.75	2.2926	14 29 53.6	14.016	4	0 21 9.67	2.1622	2 5 51.8	16.349
5	22 37 7.18	2.2886	14 15 50.1	14.103	5	0 23 19.37	2.1611	1 49 30.6	16.357
6	22 39 24.38	2.2846	14 1 41.3	14.189	6	0 25 29.00	2.1601	1 33 9.0	16.363
7	22 41 41.34	2.2806	13 47 27.4	14.273	7	0 27 38.58	2.1592	1 16 47.1	16.367
8	22 43 58.05	2.2766	13 33 8.6	14.355	8	0 29 48.10	2.1584	1 0 25.0	16.370
9	22 46 14.53	2.2727	13 18 44.8	14.436	9	0 31 57.58	2.1577	0 44 2.7	16.371
10	22 48 30.77	2.2688	13 4 16.2	14.515	10	0 34 7.02	2.1570	0 27 40.4	16.370
11	22 50 46.78	2.2650	12 49 43.0	14.592	11	0 36 16.42	2.1563	S. 0 11 18.2	16.368
12	22 53 2.57	2.2613	12 35 5.2	14.668	12	0 38 25.78	2.1557	N. 0 5 3.8	16.365
13	22 55 18.14	2.2577	12 20 22.9	14.742	13	0 40 35.10	2.1552	0 21 25.6	16.360
14	22 57 33.49	2.2540	12 5 36.1	14.815	14	0 42 44.40	2.1548	0 37 47.0	16.353
15	22 59 48.62	2.2504	11 50 45.0	14.886	15	0 44 53.68	2.1544	0 54 7.9	16.344
16	23 2 3.54	2.2468	11 35 49.7	14.955	16	0 47 2.93	2.1542	1 10 28.2	16.334
17	23 4 18.24	2.2433	11 20 50.3	15.023	17	0 49 12.17	2.1540	1 26 47.9	16.322
18	23 6 32.74	2.2399	11 5 46.9	15.089	18	0 51 21.41	2.1539	1 43 6.8	16.308
19	23 8 47.03	2.2366	10 50 39.6	15.154	19	0 53 30.64	2.1538	1 59 24.9	16.293
20	23 11 1.13	2.2332	10 35 28.4	15.217	20	0 55 39.87	2.1538	2 15 42.0	16.276
21	23 13 15.03	2.2301	10 20 13.5	15.278	21	0 57 49.09	2.1538	2 31 58.0	16.257
22	23 15 28.74	2.2269	10 4 55.0	15.338	22	0 59 58.32	2.1539	2 48 12.9	16.237
23	23 17 42.26	2.2238	9 49 33.0	15.396	23	1 2 7.55	2.1540	3 4 26.5	16.215
24	23 19 55.60	2.2207	S. 9 34 7.5	15.452	24	1 4 16.80	2.1543	N. 3 20 38.7	16.192

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 4 16.80	2.1543	N. 3 20 38.7	16.192
1	1 6 26.07	2.1547	3 36 49.5	16.167
2	1 8 35.36	2.1551	3 52 58.7	16.140
3	1 10 44.68	2.1556	4 9 6.3	16.112
4	1 12 54.03	2.1562	4 25 12.2	16.082
5	1 15 3.42	2.1568	4 41 16.2	16.051
6	1 17 12.85	2.1575	4 57 18.3	16.018
7	1 19 22.32	2.1582	5 13 18.4	15.983
8	1 21 31.83	2.1590	5 29 16.3	15.946
9	1 23 41.39	2.1598	5 45 12.0	15.908
10	1 25 51.00	2.1607	6 1 5.4	15.869
11	1 28 0.67	2.1617	6 16 56.4	15.828
12	1 30 10.40	2.1627	6 32 44.9	15.786
13	1 32 20.19	2.1638	6 48 30.8	15.742
14	1 34 30.05	2.1650	7 4 14.0	15.696
15	1 36 39.99	2.1663	7 19 54.4	15.649
16	1 38 50.00	2.1675	7 35 31.9	15.600
17	1 41 0.09	2.1688	7 51 6.4	15.549
18	1 43 10.26	2.1702	8 6 37.9	15.497
19	1 45 20.52	2.1717	8 22 6.2	15.444
20	1 47 30.86	2.1732	8 37 31.3	15.389
21	1 49 41.30	2.1748	8 52 53.0	15.333
22	1 51 51.83	2.1764	9 8 11.3	15.275
23	1 54 2.46	2.1780	N. 9 23 26.0	15.215

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 56 13.19	2.1797	N. 9 38 37.1	15.154
1	1 58 24.03	2.1815	9 53 44.5	15.092
2	2 0 34.97	2.1833	10 8 48.1	15.028
3	2 2 46.02	2.1852	10 23 47.9	14.963
4	2 4 57.19	2.1870	10 38 43.7	14.896
5	2 7 8.47	2.1889	10 53 35.3	14.827
6	2 9 19.86	2.1909	11 8 22.8	14.757
7	2 11 31.38	2.1930	11 23 6.1	14.685
8	2 13 43.02	2.1951	11 37 45.0	14.612
9	2 15 54.79	2.1972	11 52 19.5	14.537
10	2 18 6.69	2.1994	12 6 49.5	14.461
11	2 20 18.72	2.2016	12 21 14.9	14.384
12	2 22 30.88	2.2038	12 35 35.7	14.306
13	2 24 43.18	2.2061	12 49 51.7	14.226
14	2 26 55.61	2.2084	13 4 2.8	14.144
15	2 29 8.18	2.2108	13 18 9.0	14.061
16	2 31 20.90	2.2131	13 32 10.2	13.977
17	2 33 33.76	2.2155	13 46 6.2	13.891
18	2 35 46.76	2.2179	13 59 57.1	13.804
19	2 37 59.91	2.2204	14 13 42.7	13.716
20	2 40 13.21	2.2229	14 27 22.9	13.627
21	2 42 26.66	2.2255	14 40 57.8	13.536
22	2 44 40.27	2.2280	14 54 27.2	13.443
23	2 46 54.03	2.2306	15 7 50.9	13.348
24	2 49 7.94	2.2332	N.15 21 8.9	13.253

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 49 7.94	2.2332	N.15 21 8.9	13.253
1	2 51 22.01	2.2358	15 34 21.2	13.157
2	2 53 36.24	2.2384	15 47 27.7	13.059
3	2 55 50.63	2.2411	16 0 28.3	12.960
4	2 58 5.17	2.2437	16 13 23.0	12.860
5	3 0 19.87	2.2464	16 26 11.6	12.758
6	3 2 34.74	2.2491	16 38 54.0	12.655
7	3 4 49.77	2.2518	16 51 30.2	12.551
8	3 7 4.96	2.2545	17 4 0.1	12.447
9	3 9 20.31	2.2573	17 16 23.8	12.341
10	3 11 35.83	2.2600	17 28 41.1	12.233
11	3 13 51.51	2.2627	17 40 51.8	12.123
12	3 16 7.35	2.2654	17 52 55.8	12.013
13	3 18 23.36	2.2682	18 4 53.2	11.901
14	3 20 39.53	2.2709	18 16 44.0	11.789
15	3 22 55.87	2.2737	18 28 28.0	11.676
16	3 25 12.37	2.2764	18 40 5.2	11.562
17	3 27 29.03	2.2791	18 51 35.4	11.446
18	3 29 45.86	2.2818	19 2 58.7	11.330
19	3 32 2.85	2.2845	19 14 15.0	11.212
20	3 34 20.00	2.2872	19 25 24.1	11.093
21	3 36 37.31	2.2899	19 36 26.0	10.972
22	3 38 54.78	2.2926	19 47 20.7	10.851
23	3 41 12.41	2.2952	N.19 58 8.1	10.730

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 43 30.20	2.2978	N.20 8 48.3	10.607
1	3 45 48.15	2.3004	20 19 21.1	10.483
2	3 48 6.25	2.3029	20 29 46.3	10.358
3	3 50 24.50	2.3055	20 40 3.9	10.231
4	3 52 42.91	2.3080	20 50 14.0	10.104
5	3 55 1.47	2.3105	21 0 16.4	9.977
6	3 57 20.18	2.3130	21 10 11.2	9.849
7	3 59 39.04	2.3155	21 19 58.3	9.720
8	4 1 58.04	2.3180	21 29 37.5	9.589
9	4 4 17.19	2.3204	21 39 8.8	9.457
10	4 6 36.48	2.3227	21 48 32.2	9.324
11	4 8 55.91	2.3250	21 57 47.7	9.191
12	4 11 15.47	2.3272	22 6 55.2	9.058
13	4 13 35.17	2.3294	22 15 54.6	8.923
14	4 15 55.00	2.3316	22 24 45.9	8.788
15	4 18 14.96	2.3337	22 33 29.1	8.652
16	4 20 35.05	2.3358	22 42 4.1	8.515
17	4 22 55.26	2.3378	22 50 30.9	8.377
18	4 25 15.58	2.3398	22 58 49.4	8.239
19	4 27 36.02	2.3418	23 6 59.6	8.100
20	4 29 56.58	2.3437	23 15 1.5	7.960
21	4 32 17.26	2.3455	23 22 54.9	7.820
22	4 34 38.05	2.3473	23 30 39.9	7.679
23	4 36 58.93	2.3489	23 38 16.5	7.538
24	4 39 19.91	2.3505	N.23 45 44.6	7.397

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 29.					WEDNESDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 39 19.91	2.3505	N.23 45 44.6	7.397	0	5 36 3.24	2.3689	N.26 1 21.5	3.876
1	4 41 40.99	2.3521	23 53 4.2	7.255	1	5 38 25.37	2.3686	26 5 9.5	3.727
2	4 44 2.17	2.3537	24 0 15.2	7.112	2	5 40 47.48	2.3683	26 8 48.6	3.578
3	4 46 23.44	2.3551	24 7 17.6	6.968	3	5 43 9.57	2.3679	26 12 18.8	3.428
4	4 48 44.80	2.3565	24 14 11.4	6.824	4	5 45 31.63	2.3674	26 15 40.0	3.278
5	4 51 6.23	2.3578	24 20 56.5	6.679	5	5 47 53.66	2.3668	26 18 52.2	3.128
6	4 53 27.74	2.3591	24 27 32.9	6.534	6	5 50 15.66	2.3661	26 21 55.4	2.979
7	4 55 49.33	2.3603	24 34 0.6	6.389	7	5 52 37.61	2.3654	26 24 49.7	2.830
8	4 58 10.99	2.3614	24 40 19.6	6.244	8	5 54 59.51	2.3646	26 27 35.0	2.681
9	5 0 32.71	2.3625	24 46 29.9	6.099	9	5 57 21.36	2.3636	26 30 11.4	2.533
10	5 2 54.49	2.3635	24 52 31.4	5.952	10	5 59 43.15	2.3626	26 32 38.8	2.384
11	5 5 16.33	2.3644	24 58 24.1	5.805	11	6 2 4.87	2.3615	26 34 57.4	2.235
12	5 7 38.22	2.3653	25 4 8.0	5.658	12	6 4 26.53	2.3603	26 37 7.1	2.067
13	5 10 0.16	2.3660	25 9 43.1	5.511	13	6 6 48.11	2.3590	26 39 7.9	1.939
14	5 12 22.14	2.3667	25 15 9.3	5.363	14	6 9 9.61	2.3577	26 40 59.8	1.790
15	5 14 44.16	2.3673	25 20 26.6	5.214	15	6 11 31.03	2.3562	26 42 42.7	1.642
16	5 17 6.21	2.3678	25 25 35.1	5.066	16	6 13 52.36	2.3546	26 44 16.8	1.495
17	5 19 28.29	2.3682	25 30 34.6	4.918	17	6 16 13.59	2.3529	26 45 42.1	1.348
18	5 21 50.40	2.3686	25 35 25.2	4.770	18	6 18 34.72	2.3512	26 46 58.5	1.201
19	5 24 12.53	2.3688	25 40 6.9	4.621	19	6 20 55.74	2.3494	26 48 6.1	1.054
20	5 26 34.66	2.3689	25 44 39.7	4.472	20	6 23 16.65	2.3476	26 49 5.0	0.908
21	5 28 56.80	2.3690	25 49 3.6	4.323	21	6 25 37.45	2.3456	26 49 55.1	0.762
22	5 31 18.95	2.3691	25 53 18.5	4.174	22	6 27 58.13	2.3435	26 50 36.4	0.617
23	5 33 41.10	2.3690	25 57 24.5	4.025	23	6 30 18.68	2.3413	26 51 9.0	0.472
24	5 36 3.24	2.3689	N.26 1 21.5	3.876	24	6 32 39.10	2.3391	N.26 51 33.0	0.327

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	4	6	36.0
○ Full Moon, ...	12	9	51.4
☾ Last Quarter, ...	19	17	47.8
● New Moon, ...	26	10	42.6

	d	h
☾ Apogee, ...	7	11.3
☾ Perigee, ...	23	7.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	51° 53′ 44″	2928	53° 25′ 27″	2947	54° 56′ 46″	2966	56° 27′ 41″	2985
	Venus	W.	14 5 33	3129	15 33 8	3073	17 1 51	3037	18 31 18	3013
	Pollux	E.	47 58 19	2565	46 19 4	2604	44 40 15	2623	43 11 51	2640
	Jupiter	E.	78 7 20	2574	76 27 49	2592	74 48 43	2610	73 10 2	2629
	Regulus	E.	84 20 17	2593	82 41 13	2612	81 2 34	2629	79 24 19	2648
2	Sun	W.	63 56 31	3076	65 25 10	3094	66 53 27	3111	68 21 23	3129
	Venus	W.	26 3 10	2984	27 33 43	2989	29 4 10	2994	30 34 30	3001
	Pollux	E.	34 55 55	2731	33 19 56	2748	31 44 20	2766	30 9 8	2783
	Jupiter	E.	65 2 40	2716	63 26 22	2733	61 50 26	2750	60 14 53	2767
	Regulus	E.	71 19 7	2735	69 43 14	2753	68 7 44	2769	66 32 35	2785
3	Sun	W.	75 36 0	3209	77 1 58	3225	78 27 38	3239	79 53 1	3253
	Venus	W.	38 3 48	3044	39 33 6	3053	41 2 13	3063	42 31 8	3072
	Aldebaran	W.	22 56 44	3030	24 26 19	3025	25 56 1	3021	27 25 48	3018
	Jupiter	E.	52 22 28	2846	50 49 0	2862	49 15 52	2876	47 43 2	2891
	Regulus	E.	58 42 11	2864	57 9 6	2880	55 36 21	2894	54 3 54	2908
4	Sun	W.	86 55 53	3319	88 19 43	3331	89 43 19	3341	91 6 43	3352
	Venus	W.	49 52 54	3117	51 20 43	3125	52 48 22	3133	54 15 52	3140
	Aldebaran	W.	34 54 33	3032	36 24 6	3038	37 53 32	3043	39 22 52	3048
	Jupiter	E	40 3 22	2958	38 32 16	2971	37 1 27	2984	35 30 54	2996
	Regulus	E.	46 26 3	2974	44 55 18	2987	43 24 49	2999	41 54 35	3011
	Spica	E.	100 28 14	2962	98 57 13	2973	97 26 26	2983	95 55 52	2993
5	Sun	W.	98 0 46	3399	99 23 4	3407	100 45 13	3414	102 7 14	3420
	Venus	W.	61 31 16	3172	62 57 59	3177	64 24 36	3182	65 51 7	3186
	Aldebaran	W.	46 47 54	3073	48 16 36	3078	49 45 12	3082	51 13 43	3087
	Regulus	E.	34 27 2	3068	32 58 13	3079	31 29 38	3091	30 1 17	3102
	Spica	E.	88 25 54	3035	86 56 25	3043	85 27 5	3050	83 57 54	3056
	Mars	E.	109 55 13	2954	108 24 3	2961	106 53 1	2967	105 22 7	2973
6	Sun	W.	108 55 37	3446	110 17 1	3451	111 38 20	3454	112 59 36	3456
	Venus	W.	73 2 36	3201	74 28 44	3202	75 54 51	3204	77 20 56	3204
	Aldebaran	W.	58 35 5	3104	60 3 10	3106	61 31 12	3108	62 59 12	3110
	Spica	E.	76 33 42	3081	75 5 9	3084	73 36 40	3087	72 8 15	3091
	Mars	E.	97 49 10	2993	96 18 49	2997	94 48 32	2999	93 18 18	3001
7	Sun	W.	119 45 19	3463	121 6 24	3463	122 27 29	3463	123 48 34	3463
	Venus	W.	84 31 18	3202	85 57 25	3200	87 23 34	3198	88 49 45	3195
	Aldebaran	W.	70 18 52	3112	71 46 47	3111	73 14 43	3110	74 42 40	3110
	Pollux	W.	26 3 48	3098	27 32 0	3096	29 0 15	3094	30 28 32	3091
	Spica	E.	64 46 54	3099	63 18 43	3099	61 50 32	3099	60 22 21	3099
	Mars	E.	85 47 32	3004	84 17 24	3003	82 47 15	3002	81 17 5	3001
	Antares	E.	110 39 8	3068	109 10 44	3067	107 42 19	3067	106 13 54	3066
8	Sun	W.	130 34 22	3453	131 55 39	3450	133 16 59	3446	134 38 23	3443
	Venus	W.	96 1 36	3178	97 28 11	3173	98 54 52	3168	100 21 39	3163
	Aldebaran	W.	82 2 55	3098	83 31 7	3095	84 59 23	3091	86 27 43	3087
	Pollux	W.	37 50 42	3078	39 19 19	3074	40 48 0	3070	42 16 46	3065
	Spica	E.	53 1 15	3093	51 32 57	3091	50 4 36	3089	48 36 13	3086
	Mars	E.	73 45 43	2969	72 15 16	2965	70 44 45	2961	69 14 9	2977
	Antares	E.	98 51 20	3076	97 22 41	3073	95 53 58	3069	94 25 11	3066
9	Venus	W.	107 37 13	3133	109 4 42	3127	110 32 19	3119	112 0 5	3113

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	57° 58′ 13″	3004	59° 28′ 21″	3022	60° 58′ 7″	3040	62° 27′ 30″	3058
	Venus	W.	20 1 15	2997	21 31 32	2988	23 2 0	2983	24 32 34	2981
	Pollux	E.	41 23 51	2659	39 46 16	2677	38 9 5	2695	36 32 18	2713
	Jupiter	E.	71 31 46	2646	69 53 54	2664	68 16 26	2681	66 39 21	2699
	Regulus	E.	77 46 29	2666	76 9 3	2684	74 32 1	2701	72 55 22	2719
2	Sun	W.	69 48 58	3145	71 16 13	3162	72 43 8	3178	74 9 44	3194
	Venus	W.	32 4 42	3008	33 34 45	3017	35 4 37	3026	36 34 18	3034
	Pollux	E.	28 34 18	2801	26 59 51	2818	25 25 47	2836	23 52 6	2853
	Jupiter	E.	58 39 42	2784	57 4 53	2799	55 30 24	2815	53 56 16	2831
	Regulus	E.	64 57 49	2802	63 23 24	2818	61 49 19	2834	60 15 35	2849
3	Sun	W.	81 18 7	3268	82 42 56	3281	84 7 30	3294	85 31 49	3306
	Venus	W.	43 59 52	3082	45 28 24	3091	46 56 45	3100	48 24 55	3109
	Aldebaran	W.	28 55 38	3020	30 25 26	3022	31 55 12	3024	33 24 55	3028
	Jupiter	E.	46 10 31	2905	44 38 18	2918	43 6 22	2932	41 34 44	2945
	Regulus	E.	52 31 45	2922	50 59 54	2935	49 28 20	2949	47 57 3	2962
4	Sun	W.	92 29 54	3363	93 52 53	3372	95 15 41	3382	96 38 18	3390
	Venus	W.	55 43 13	3147	57 10 26	3154	58 37 30	3160	60 4 27	3167
	Aldebaran	W.	40 52 5	3053	42 21 12	3059	43 50 12	3064	45 19 6	3069
	Jupiter	E.	34 0 36	3009	32 30 34	3021	31 0 47	3032	29 31 14	3044
	Regulus	E.	40 24 36	3022	38 54 51	3031	37 25 21	3046	35 56 5	3056
	Spica	E.	94 25 30	3002	92 55 20	3011	91 25 21	3019	89 55 32	3028
5	Sun	W.	103 29 8	3427	104 50 54	3432	106 12 34	3438	107 34 8	3442
	Venus	W.	67 17 33	3189	68 43 55	3193	70 10 12	3196	71 36 26	3199
	Aldebaran	W.	52 42 8	3091	54 10 29	3095	55 38 45	3098	57 6 57	3101
	Regulus	E.	28 33 10	3114	27 5 17	3127	25 37 40	3140	24 10 19	3154
	Spica	E.	82 28 51	3062	80 59 54	3067	79 31 4	3072	78 2 20	3077
	Mars	E.	103 51 20	2977	102 20 39	2982	100 50 4	2987	99 19 35	2990
6	Sun	W.	114 20 49	3459	115 41 59	3461	117 3 7	3463	118 24 13	3463
	Venus	W.	78 47 0	3204	80 13 4	3204	81 39 8	3204	83 5 12	3203
	Aldebaran	W.	64 27 10	3110	65 55 7	3112	67 23 2	3112	68 50 57	3112
	Spica	E.	70 39 54	3093	69 11 36	3095	67 43 20	3096	66 15 6	3098
	Mars	E.	91 48 6	3002	90 17 56	3004	88 47 48	3004	87 17 40	3004
7	Sun	W.	125 9 40	3461	126 30 48	3460	127 51 57	3458	129 13 8	3455
	Venus	W.	90 16 0	3193	91 42 18	3189	93 8 40	3186	94 35 6	3183
	Aldebaran	W.	76 10 38	3108	77 38 38	3105	79 6 41	3104	80 34 46	3101
	Pollux	W.	31 56 52	3090	33 25 14	3087	34 53 40	3084	36 22 9	3081
	Spica	E.	58 54 10	3096	57 25 58	3097	55 57 45	3096	54 29 31	3095
	Mars	E.	79 46 54	3000	78 16 41	2997	76 46 25	2995	75 16 6	2992
	Antares	E.	104 45 27	3085	103 16 59	3082	101 48 28	3081	100 19 55	3079
8	Sun	W.	135 59 51	3438	137 21 24	3435	138 43 1	3430	140 4 44	3425
	Venus	W.	101 48 32	3158	103 15 32	3153	104 42 38	3146	106 9 52	3140
	Aldebaran	W.	87 56 8	3083	89 24 38	3079	90 53 13	3074	92 21 54	3069
	Pollux	W.	43 45 38	3061	45 14 35	3056	46 43 38	3052	48 12 47	3047
	Spica	E.	47 7 46	3083	45 39 16	3081	44 10 43	3078	42 42 6	3075
	Mars	E.	67 43 27	2973	66 12 40	2969	64 41 48	2963	63 10 49	2958
	Antares	E.	92 56 20	3061	91 27 23	3057	89 58 21	3053	88 29 14	3047
9	Venus	W.	113 27 59	3105	114 56 2	3098	116 24 14	3091	117 52 35	3083

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Pollux	W.	49° 42′ 2″	3041	51° 11′ 24″	3035	52° 40′ 53″	3029	54° 10′ 30″	3023
	Jupiter	W.	20 10 35	3110	21 38 33	3095	23 6 49	3082	24 35 21	3069
	Spica	E.	41 13 26	3072	39 44 42	3069	38 15 54	3065	36 47 2	3062
	Mars	E.	61 39 43	2952	60 8 30	2946	58 37 10	2940	57 5 42	2934
	Antares	E.	87 0 0	3043	85 30 40	3037	84 1 13	3031	82 31 39	3025
10	Pollux	W.	61 40 33	2989	63 11 0	2981	64 41 36	2974	66 12 21	2966
	Jupiter	W.	32 1 44	3014	33 31 40	3004	35 1 48	2993	36 32 9	2984
	Regulus	W.	25 39 44	3060	27 8 43	3045	28 38 0	3031	30 7 34	3018
	Mars	E.	49 26 14	2898	47 53 53	2891	46 21 23	2883	44 48 43	2875
	Antares	E.	75 1 52	2992	73 31 29	2985	72 0 58	2978	70 30 18	2970
11	Pollux	W.	73 48 36	2926	75 20 22	2917	76 52 19	2909	78 24 27	2901
	Jupiter	W.	44 6 52	2937	45 38 24	2927	47 10 8	2918	48 42 4	2909
	Regulus	W.	37 39 13	2960	39 10 16	2950	40 41 32	2939	42 13 1	2928
	Mars	E.	37 2 44	2834	35 29 0	2825	33 55 4	2816	32 20 57	2808
	Antares	E.	62 54 32	2931	61 22 53	2924	59 51 4	2915	58 19 4	2907
12	Pollux	W.	86 7 52	2856	87 41 7	2848	89 14 33	2838	90 48 11	2829
	Jupiter	W.	56 24 39	2862	57 57 46	2853	59 31 5	2845	61 4 35	2835
	Regulus	W.	49 53 46	2877	51 26 34	2867	52 59 35	2858	54 32 48	2848
	Antares	E.	50 36 27	2865	49 3 23	2857	47 30 9	2848	45 56 44	2841
	α Aquilæ	E.	98 56 56	3689	97 39 57	3674	96 22 42	3660	95 5 12	3647
	Saturn	E.	104 4 36	2884	102 31 57	2875	100 59 6	2866	99 26 4	2857
13	Jupiter	W.	68 55 6	2788	70 29 49	2780	72 4 43	2771	73 39 49	2762
	Regulus	W.	62 22 4	2800	63 56 32	2790	65 31 13	2781	67 6 6	2771
	Antares	E.	38 7 2	2801	36 32 35	2793	34 57 58	2786	33 23 12	2779
	α Aquilæ	E.	88 34 37	3598	87 16 0	3590	85 57 15	3585	84 38 24	3581
	Saturn	E.	91 37 54	2811	90 3 41	2802	88 29 16	2793	86 54 39	2784
14	Jupiter	W.	81 38 17	2717	83 14 34	2708	84 51 3	2700	86 27 43	2691
	Regulus	W.	75 3 37	2725	76 39 43	2716	78 16 2	2707	79 52 33	2698
	Spica	W.	21 16 28	2820	22 50 30	2798	24 25 1	2778	25 59 58	2760
	α Aquilæ	E.	78 3 22	3575	76 44 20	3578	75 25 22	3582	74 6 28	3588
	Saturn	E.	78 58 36	2739	77 22 48	2731	75 46 49	2722	74 10 38	2713
	Fomalhaut	E.	107 59 56	2897	106 27 33	2885	104 54 55	2873	103 22 2	2862
15	Jupiter	W.	94 33 58	2648	96 11 48	2640	97 49 49	2632	99 28 1	2623
	Regulus	W.	87 58 5	2654	89 35 47	2646	91 13 40	2637	92 51 45	2628
	Spica	W.	34 0 9	2687	35 37 7	2674	37 14 22	2663	38 51 52	2651
	Saturn	E.	66 6 52	2671	64 29 33	2663	62 52 3	2655	61 14 22	2646
	α Aquilæ	E.	67 34 10	3643	66 16 22	3661	64 58 53	3680	63 41 45	3702
	Fomalhaut	E.	95 34 9	2811	93 59 55	2801	92 25 29	2792	90 50 51	2784
16	Spica	W.	47 3 5	2599	48 42 2	2589	50 21 12	2579	52 0 36	2570
	Mars	W.	28 4 9	2473	29 46 0	2465	31 28 3	2456	33 10 18	2448
	Saturn	E.	53 3 16	2607	51 24 31	2600	49 45 36	2593	48 6 31	2586
	α Aquilæ	E.	57 22 58	3861	56 8 59	3905	54 55 44	3953	53 43 18	4008
	Fomalhaut	E.	82 54 58	2744	81 19 17	2738	79 43 27	2731	78 7 28	2725
	Sun	E.	137 23 14	2912	135 51 10	2901	134 18 53	2892	132 46 24	2882
17	Spica	W.	60 20 46	2523	62 1 27	2515	63 42 20	2506	65 23 25	2497
	Mars	W.	41 44 37	2405	43 28 5	2396	45 11 45	2388	46 55 37	2379
	Fomalhaut	E.	70 5 39	2699	68 28 58	2695	66 52 12	2692	65 15 21	2689

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P. L. of Diff.
9	Pollux	W.	55° 40′ 14″	3017	57° 10′ 6″	3009	58° 40′ 7″	3003	60° 10′ 16″	2997
	Jupiter	W.	26 4 9	3056	27 33 12	3045	29 2 29	3034	30 32 0	3023
	Spica	E.	35 18 6	3060	33 49 7	3057	32 20 5	3055	30 51 0	3053
	Mars	E.	55 34 6	2927	54 2 21	2920	52 30 28	2913	50 58 26	2905
	Antares	E.	81 1 57	3019	79 32 8	3013	78 2 11	3006	76 32 6	2999
10	Pollux	W.	67 43 16	2958	69 14 21	2950	70 45 36	2942	72 17 1	2935
	Jupiter	W.	38 2 42	2974	39 33 27	2965	41 4 24	2956	42 35 32	2946
	Regulus	W.	31 37 24	3005	33 7 30	2994	34 37 50	2983	36 8 24	2971
	Mars	E.	43 15 52	2867	41 42 51	2859	40 9 39	2851	38 36 17	2842
	Antares	E.	68 59 28	2963	67 28 29	2955	65 57 20	2947	64 26 1	2939
11	Pollux	W.	79 56 45	2891	81 29 15	2883	83 1 56	2874	84 34 48	2865
	Jupiter	W.	50 14 11	2900	51 46 30	2891	53 19 1	2881	54 51 44	2872
	Regulus	W.	43 44 44	2918	45 16 40	2908	46 48 49	2898	48 21 11	2887
	Mars	E.	30 46 39	2798	29 12 9	2789	27 37 27	2780	26 2 33	2772
	Antares	E.	56 46 54	2898	55 14 33	2891	53 42 2	2882	52 9 20	2873
12	Pollux	W.	92 22 1	2821	93 56 2	2811	95 30 15	2802	97 4 40	2794
	Jupiter	W.	62 38 17	2826	64 12 11	2817	65 46 17	2808	67 20 35	2798
	Regulus	W.	56 6 14	2838	57 39 53	2828	59 13 44	2818	60 47 48	2809
	Antares	E.	44 23 9	2832	42 49 23	2824	41 15 26	2816	39 41 19	2808
	α Aquilæ	E.	93 47 28	3635	92 29 32	3624	91 11 24	3614	89 53 5	3606
	Saturn	E.	97 52 50	2848	96 19 24	2838	94 45 46	2829	93 11 56	2820
13	Jupiter	W.	75 15 7	2753	76 50 37	2744	78 26 19	2735	80 2 12	2726
	Regulus	W.	68 41 12	2762	70 16 30	2753	71 52 0	2744	73 27 42	2734
	Antares	E.	31 48 16	2772	30 13 12	2765	28 38 0	2760	27 2 40	2755
	α Aquilæ	E.	83 19 29	3577	82 0 30	3575	81 41 28	3574	79 22 25	3574
	Saturn	E.	85 19 50	2775	83 44 49	2766	82 9 36	2757	80 34 12	2748
14	Jupiter	W.	88 4 35	2683	89 41 38	2674	91 18 53	2665	92 56 20	2657
	Regulus	W.	81 29 16	2689	83 6 11	2681	84 43 17	2672	86 20 35	2663
	Spica	W.	27 35 19	2743	29 11 2	2728	30 47 5	2713	32 23 28	2699
	α Aquilæ	E.	72 47 41	3596	71 29 2	3604	70 10 32	3615	68 52 14	3628
	Saturn	E.	72 34 15	2704	70 57 41	2696	69 20 56	2688	67 44 6	2679
	Fomalhaut	E.	101 48 55	2852	100 15 34	2841	98 41 59	2831	97 8 11	2820
15	Jupiter	W.	101 6 25	2615	102 45 0	2607	104 23 46	2599	106 2 43	2590
	Regulus	W.	94 30 2	2620	96 8 30	2611	97 47 10	2603	99 26 1	2595
	Spica	W.	40 29 38	2640	42 7 38	2629	43 45 53	2619	45 24 22	2609
	Saturn	E.	59 35 30	2638	57 58 27	2631	56 20 14	2623	54 41 50	2615
	α Aquilæ	E.	62 25 0	3727	61 8 42	3755	59 52 53	3787	58 37 37	3822
	Fomalhaut	E.	89 16 2	2775	87 41 2	2767	86 5 51	2760	84 30 30	2751
16	Spica	W.	53 40 12	2561	55 20 1	2551	57 0 3	2542	58 40 18	2533
	Mars	W.	34 52 45	2438	36 35 25	2430	38 18 17	2422	40 1 21	2413
	Saturn	E.	46 27 17	2580	44 47 54	2572	43 8 21	2565	41 28 38	2559
	α Aquilæ	E.	52 31 46	4067	51 21 12	4134	50 11 43	4207	49 3 24	4290
	Fomalhaut	E.	76 31 21	2719	74 55 6	2713	73 18 44	2708	71 42 15	2703
	Sun	E.	131 13 42	2873	129 40 48	2863	128 7 42	2854	126 34 24	2845
17	Spica	W.	67 4 43	2488	68 46 13	2480	70 27 55	2471	72 9 49	2463
	Mars	W.	48 39 42	2371	50 23 59	2362	52 8 28	2354	53 53 9	2345
	Fomalhaut	E.	63 38 27	2687	62 1 30	2687	60 24 32	2685	58 47 32	2686

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	α Pegasi	E.	90° 6′ 24″	2898	88° 34′ 2″	2890	87° 1′ 30″	2883	85° 28′ 49″	2876
	Sun	E.	125 0 51	2835	123 27 12	2826	121 53 18	2817	120 19 12	2807
18	Spica	W.	73 51 56	2454	75 34 15	2445	77 16 45	2437	78 59 27	2428
	Mars	W.	55 38 3	2337	57 23 9	2328	59 8 27	2320	60 53 57	2312
	Antares	W.	27 59 3	2468	29 41 1	2457	31 23 15	2446	33 5 45	2435
	Fomalhaut	E.	57 10 33	2687	55 33 36	2689	53 56 41	2692	52 19 50	2697
	α Pegasi	E.	77 43 36	2855	76 10 19	2852	74 36 59	2851	73 3 37	2851
	Sun	E.	112 25 39	2761	110 50 20	2753	109 14 50	2744	107 39 8	2735
19	Spica	W.	87 35 59	2387	89 19 53	2379	91 3 58	2371	92 48 15	2363
	Mars	W.	69 44 30	2270	71 31 13	2262	73 18 8	2254	75 5 15	2246
	Antares	W.	41 41 47	2387	43 25 40	2378	45 9 46	2369	46 54 5	2360
	Fomalhaut	E.	44 17 56	2747	42 42 18	2765	41 7 4	2786	39 32 18	2811
	α Pegasi	E.	65 17 10	2866	63 44 7	2873	62 11 14	2881	60 38 31	2892
	Sun	E.	99 37 38	2689	98 0 44	2681	96 23 39	2672	94 46 22	2663
20	Spica	W.	101 32 28	2324	103 17 52	2317	105 3 26	2311	106 49 10	2303
	Mars	W.	84 3 48	2206	85 52 6	2199	87 40 35	2192	89 29 15	2184
	Antares	W.	55 38 46	2319	57 24 18	2311	59 10 2	2303	60 55 57	2295
	α Pegasi	E.	52 59 13	2979	51 28 34	3005	49 58 27	3035	48 28 58	3070
	Sun	E.	86 37 3	2621	84 58 37	2613	83 20 0	2605	81 41 12	2598
21	Antares	W.	69 48 15	2260	71 35 13	2253	73 22 21	2247	75 9 38	2241
	α Aquilæ	W.	38 38 41	5642	39 27 47	5366	40 20 6	5122	41 15 27	4903
	Saturn	W.	16 28 20	2430	18 11 12	2396	19 54 52	2369	21 39 11	2345
	α Pegasi	E.	41 14 20	3335	39 50 50	3415	38 28 49	3505	37 8 30	3610
	Sun	E.	73 24 36	2561	71 44 47	2553	70 4 48	2547	68 24 40	2540
22	Antares	W.	84 8 12	2214	85 56 18	2210	87 44 31	2206	89 32 50	2202
	α Aquilæ	W.	46 31 19	4114	47 41 7	4000	48 52 47	3898	50 6 9	3804
	Saturn	W.	30 27 48	2271	32 14 30	2262	34 1 26	2253	35 48 34	2246
	Sun	E.	60 1 54	2512	58 20 58	2508	56 39 56	2504	54 58 48	2499
23	Antares	W.	98 35 37	2189	100 24 21	2187	102 13 8	2186	104 1 56	2186
	α Aquilæ	W.	56 34 36	3454	57 55 52	3402	59 18 6	3355	60 41 14	3313
	Saturn	W.	44 46 42	2219	46 34 41	2216	48 22 45	2213	50 10 53	2211
	Sun	E.	46 31 54	2486	44 50 21	2484	43 8 45	2482	41 27 7	2482
24	Saturn	W.	59 12 3	2209	61 0 17	2210	62 48 30	2212	64 36 40	2214
	Sun	E.	32 59 2	2487	31 17 30	2489	29 36 2	2493	27 54 39	2497
28	Sun	W.	19 59 12	2800	21 33 40	2815	23 7 48	2831	24 41 36	2845
	Pollux	E.	53 28 43	2472	51 46 51	2488	50 5 21	2503	48 24 12	2519
	Jupiter	E.	83 25 35	2489	81 44 7	2504	80 3 0	2520	78 22 15	2536
	Regulus	E.	89 50 39	2483	88 9 2	2497	86 27 45	2512	84 46 49	2528
29	Sun	W.	32 25 39	2925	33 57 26	2942	35 28 52	2958	36 59 57	2975
	Pollux	E.	40 3 55	2599	38 24 58	2615	36 46 23	2631	35 8 10	2648
	Jupiter	E.	70 3 57	2615	68 25 23	2632	66 47 11	2648	65 9 21	2664
	Regulus	E.	76 27 32	2606	74 48 45	2622	73 10 20	2638	71 32 17	2655
30	Sun	W.	44 30 11	3057	45 59 13	3074	47 27 54	3091	48 56 15	3106
	Jupitor	E.	57 5 38	2745	55 29 58	2762	53 54 40	2778	52 19 43	2793
	Regulus	E.	63 27 27	2735	61 51 33	2750	60 16 0	2766	58 40 48	2782

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	α Pegasi	E.	83° 55′ 59″	2870	82° 23′ 2″	2866	80° 49′ 59″	2861	79° 16′ 50″	2857
	Sun	E.	118 44 53	2798	117 10 22	2788	115 35 39	2780	114 0 45	2771
18	Spica	W.	80 42 22	2410	82 25 29	2412	84 8 47	2403	85 52 17	2395
	Mars	W.	62 39 39	2304	64 25 33	2295	66 11 40	2287	67 57 59	2279
	Antares	W.	34 48 29	2425	36 31 28	2415	38 14 41	2406	39 58 7	2396
	Fomalhaut	E.	50 43 6	2703	49 6 30	2711	47 30 5	2721	45 53 53	2732
	α Pegasi	E.	71 30 15	2852	69 56 54	2853	68 23 35	2856	66 50 20	2860
	Sun	E.	106 3 14	2725	104 27 8	2716	102 50 50	2707	101 14 20	2698
19	Spica	W.	94 32 43	2355	96 17 22	2347	98 2 13	2339	99 47 15	2332
	Mars	W.	76 52 34	2238	78 40 5	2230	80 27 48	2222	82 15 42	2214
	Antares	W.	48 38 37	2352	50 23 21	2344	52 8 17	2335	53 53 26	2327
	Fomalhaut	E.	37 58 4	2841	36 24 29	2876	34 51 40	2919	33 19 45	2970
	α Pegasi	E.	59 6 2	2905	57 33 49	2919	56 1 54	2936	54 30 21	2956
	Sun	E.	93 8 53	2655	91 31 13	2646	89 53 21	2638	88 15 18	2629
20	Spica	W.	108 35 5	2296	110 21 10	2290	112 7 24	2283	113 53 48	2277
	Mars	W.	91 18 6	2177	93 7 8	2170	94 56 21	2163	96 45 44	2156
	Antares	W.	62 42 4	2288	64 28 21	2281	66 14 49	2274	68 1 27	2267
	α Pegasi	E.	47 0 12	3110	45 32 14	3155	44 5 11	3207	42 39 10	3267
	Sun	E.	80 2 14	2590	78 23 5	2582	76 43 45	2574	75 4 15	2568
21	Antares	W.	76 57 4	2235	78 44 39	2230	80 32 22	2225	82 20 13	2219
	α Aquilæ	W.	42 13 39	4710	43 14 30	4535	44 17 51	4379	45 23 31	4240
	Saturn	W.	23 24 5	2326	25 9 27	2309	26 55 14	2294	28 41 22	2282
	α Pegasi	E.	35 50 6	3731	34 33 52	3872	33 20 4	4037	32 9 1	4230
	Sun	E.	66 44 23	2535	65 3 58	2528	63 23 24	2523	61 42 43	2517
22	Antares	W.	91 21 14	2198	93 9 44	2196	94 58 18	2193	96 46 56	2191
	α Aquilæ	W.	51 21 7	3720	52 37 33	3643	53 55 21	3574	55 14 24	3511
	Saturn	W.	37 35 53	2239	39 23 23	2233	41 11 2	2227	42 58 49	2223
	Sun	E.	53 17 34	2496	51 36 15	2493	49 54 52	2490	48 13 25	2487
23	Antares	W.	105 50 45	2186	107 39 34	2186	109 28 23	2186	111 17 11	2188
	α Aquilæ	W.	62 5 11	3275	63 29 52	3240	64 55 14	3209	66 21 12	3183
	Saturn	W.	51 59 4	2210	53 47 17	2208	55 35 32	2208	57 23 48	2208
	Sun	E.	39 45 29	2482	38 3 51	2482	36 22 13	2483	34 40 36	2485
24	Saturn	W.	66 24 47	2216	68 12 50	2220	70 0 48	2225	71 48 39	2229
	Sun	E.	26 13 21	2501	24 32 9	2507	22 51 5	2512	21 10 9	2520
28	Sun	W.	26 15 5	2861	27 48 14	2876	29 21 3	2893	30 53 31	2909
	Pollux	E.	46 43 25	2535	45 3 0	2550	43 22 56	2566	41 43 14	2583
	Jupiter	E.	76 41 52	2552	75 1 51	2567	73 22 11	2583	71 42 53	2599
	Regulus	E.	83 6 15	2543	81 26 2	2559	79 46 10	2574	78 6 40	2591
29	Sun	W.	38 30 41	2992	40 1 4	3008	41 31 7	3025	43 0 49	3041
	Pollux	E.	33 30 20	2664	31 52 52	2681	30 15 47	2698	28 39 5	2715
	Jupiter	E.	63 31 53	2681	61 54 47	2696	60 18 2	2713	58 41 39	2729
	Regulus	E.	69 54 36	2671	68 17 17	2687	66 40 19	2703	65 3 42	2719
30	Sun	W.	50 24 17	3123	51 51 59	3138	53 19 23	3153	54 46 28	3168
	Jupiter	E.	50 45 6	2809	49 10 50	2825	47 36 55	2841	46 3 20	2856
	Regulus	E.	57 5 57	2798	55 31 26	2813	53 57 15	2828	52 23 24	2843

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	2 34 51.19	9.548	N.15 11 1.1	45.17	15 54.07	66.08	3 3.99	0.307
Frid.	2	2 38 40.62	9.570	15 28 57.6	44.54	15 53.84	66.16	3 11.10	0.285
Sat.	3	2 42 30.59	9.592	15 46 38.8	43.89	15 53.61	66.24	3 17.67	0.263
Sun.	4	2 46 21.09	9.615	16 4 4.3	43.22	15 53.39	66.32	3 23.71	0.240
Mon.	5	2 50 12.13	9.638	16 21 13.6	42.55	15 53.17	66.40	3 29.20	0.217
Tues.	6	2 54 3.71	9.661	16 38 6.6	41.86	15 52.95	66.48	3 34.16	0.194
Wed.	7	2 57 55.85	9.685	16 54 42.9	41.16	15 52.73	66.56	3 38.57	0.171
Thur.	8	3 1 48.55	9.708	17 11 2.2	40.44	15 52.52	66.65	3 42.41	0.148
Frid.	9	3 5 41.81	9.731	17 27 4.4	39.73	15 52.30	66.73	3 45.70	0.125
Sat.	10	3 9 35.64	9.755	17 42 49.0	38.99	15 52.09	66.81	3 48.44	0.101
Sun.	11	3 13 30.04	9.779	17 58 15.9	38.25	15 51.88	66.89	3 50.55	0.077
Mon.	12	3 17 25.01	9.803	18 13 24.9	37.49	15 51.68	66.98	3 52.13	0.053
Tues.	13	3 21 20.57	9.827	18 28 15.6	36.73	15 51.47	67.06	3 53.16	0.029
Wed.	14	3 25 16.71	9.851	18 42 47.6	35.94	15 51.27	67.14	3 53.56	0.005
Thur.	15	3 29 13.43	9.875	18 57 0.6	35.14	15 51.07	67.22	3 53.40	0.019
Frid.	16	3 33 10.72	9.900	19 10 54.6	34.34	15 50.88	67.31	3 52.66	0.044
Sat.	17	3 37 8.58	9.924	19 24 29.3	33.54	15 50.68	67.39	3 51.36	0.068
Sun.	18	3 41 7.03	9.948	19 37 44.4	32.72	15 50.49	67.47	3 49.48	0.092
Mon.	19	3 45 6.07	9.972	19 50 39.6	31.88	15 50.30	67.55	3 47.01	0.116
Tues.	20	3 49 5.67	9.995	20 3 14.6	31.03	15 50.12	67.62	3 43.96	0.139
Wed.	21	3 53 5.84	10.018	20 15 29.3	30.18	15 49.94	67.70	3 40.36	0.162
Thur.	22	3 57 6.56	10.042	20 27 23.2	29.31	15 49.76	67.77	3 36.20	0.185
Frid.	23	4 1 7.83	10.064	20 38 56.3	28.43	15 49.58	67.84	3 31.51	0.207
Sat.	24	4 5 9.62	10.085	20 50 8.2	27.54	15 49.41	67.91	3 26.29	0.228
Sun.	25	4 9 11.93	10.106	21 0 58.7	26.64	15 49.25	67.98	3 20.55	0.249
Mon.	26	4 13 14.75	10.127	21 11 27.5	25.74	15 49.09	68.05	3 14.31	0.270
Tues.	27	4 17 18.05	10.147	21 21 34.4	24.82	15 48.94	68.12	3 7.60	0.290
Wed.	28	4 21 21.81	10.166	21 31 19.1	23.89	15 48.79	68.19	3 0.41	0.309
Thur.	29	4 25 26.03	10.184	21 40 41.4	22.94	15 48.65	68.25	2 52.77	0.327
Frid.	30	4 29 30.70	10.202	21 49 41.1	21.99	15 48.51	68.31	2 44.68	0.345
Sat.	31	4 33 35.79	10.220	21 58 18.0	21.05	15 48.37	68.37	2 36.16	0.363
Sun.	32	4 37 41.27	10.236	N.22 6 31.9	20.09	15 48.24	68.43	2 27.27	0.379

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	2 34 51.67	9.549	N.15 11 3.4	45.17	3 4.01	0.307	2 37 55.68
Frid.	2	2 38 41.12	9.571	15 29 0.0	44.54	3 11.14	0.285	2 41 52.24
Sat.	3	2 42 31.11	9.593	15 46 41.3	43.89	3 17.68	0.263	2 45 48.79
Sun.	4	2 46 21.63	9.616	16 4 6.8	43.22	3 23.72	0.240	2 49 45.35
Mon.	5	2 50 12.69	9.639	16 21 16.1	42.55	3 29.21	0.217	2 53 41.90
Tues.	6	2 54 4.29	9.662	16 38 9.1	41.86	3 34.17	0.194	2 57 38.46
Wed.	7	2 57 56.44	9.685	16 54 45.4	41.16	3 38.58	0.171	3 1 35.02
Thur.	8	3 1 49.15	9.708	17 11 4.7	40.44	3 42.42	0.148	3 5 31.57
Frid.	9	3 5 42.42	9.731	17 27 6.9	39.73	3 45.71	0.125	3 9 28.13
Sat.	10	3 9 36.26	9.755	17 42 51.5	38.99	3 48.43	0.101	3 13 24.69
Sun.	11	3 13 30.68	9.779	17 58 18.4	38.25	3 50.56	0.077	3 17 21.24
Mon.	12	3 17 25.66	9.803	18 13 27.4	37.49	3 52.14	0.053	3 21 17.80
Tues.	13	3 21 21.21	9.827	18 28 18.0	36.73	3 53.14	0.029	3 25 14.35
Wed.	14	3 25 17.35	9.851	18 42 49.9	35.94	3 53.56	0.005	3 29 10.91
Thur.	15	3 29 14.07	9.875	18 57 2.9	35.14	3 53.40	0.019	3 33 7.47
Frid.	16	3 33 11.36	9.900	19 10 56.8	34.34	3 52.66	0.044	3 37 4.02
Sat.	17	3 37 9.22	9.924	19 24 31.4	33.54	3 51.36	0.068	3 41 0.58
Sun.	18	3 41 7.67	9.948	19 37 46.4	32.72	3 49.47	0.092	3 44 57.14
Mon.	19	3 45 6.70	9.972	19 50 41.6	31.88	3 47.00	0.116	3 48 53.70
Tues.	20	3 49 6.30	9.995	20 3 16.6	31.03	3 43.95	0.139	3 52 50.25
Wed.	21	3 53 6.46	10.018	20 15 31.2	30.18	3 40.35	0.162	3 56 46.81
Thur.	22	3 57 7.18	10.041	20 27 25.0	29.31	3 36.19	0.185	4 0 43.37
Frid.	23	4 1 8.42	10.063	20 38 58.0	28.43	3 31.50	0.207	4 4 39.92
Sat.	24	4 5 10.20	10.084	20 50 9.8	27.54	3 26.28	0.228	4 8 36.48
Sun.	25	4 9 12.50	10.105	21 1 0.2	26.64	3 20.54	0.249	4 12 33.04
Mon.	26	4 13 15.30	10.126	21 11 28.9	25.74	3 14.30	0.270	4 16 29.60
Tues.	27	4 17 18.58	10.146	21 21 35.7	24.82	3 7.58	0.290	4 20 26.16
Wed.	28	4 21 22.32	10.165	21 31 20.3	23.89	3 0.39	0.309	4 24 22.71
Thur.	29	4 25 26.52	10.183	21 40 42.5	22.94	2 52.75	0.327	4 28 19.27
Frid.	30	4 29 31.17	10.201	21 49 42.1	21.99	2 44.66	0.345	4 32 15.83
Sat.	31	4 33 36.24	10.219	21 58 18.9	21.05	2 36.14	0.363	4 36 12.38
Sun.	32	4 37 41.69	10.235	N.22 6 32.7	20.09	2 27.25	0.379	4 40 8.94

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour.
+9ˢ.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ	THE SUN'S Diff. for 1 hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
1	121	41° 9′ 9″.5	9′ 8″.1	145″.43	+0″.20	0.0035983	+43.7	21h 18m 34s.26
2	122	42 7 19.1	7 17.6	145.35	0.30	.0037024	43.0	21 14 38.35
3	123	43 5 26.7	5 25.1	145.27	0.37	.0038051	42.5	21 10 42.45
4	124	44 3 32.2	3 30.4	145.19	0.41	.0039066	42.0	21 6 46.55
5	125	45 1 35.8	1 33.8	145.11	0.42	.0040069	41.5	21 2 50.64
6	126	45 59 37.5	59 35.4	145.03	0.40	.0041061	41.0	20 58 54.73
7	127	46 57 37.4	57 35.2	144.95	0.36	.0042042	40.6	20 54 58.81
8	128	47 55 35.4	55 33.0	144.88	0.29	.0043014	40.3	20 51 2.90
9	129	48 53 31.7	53 29.1	144.80	0.19	.0043978	39.9	20 47 6.99
10	130	49 51 26.3	51 23.5	144.73	+0.07	.0044934	39.6	20 43 11.08
11	131	50 49 19.2	49 16.3	144.66	−0.06	.0045882	39.3	20 39 15.17
12	132	51 47 10.5	47 7.3	144.60	0.20	.0046823	39.0	20 35 19.26
13	133	52 45 0.3	44 57.1	144.54	0.33	.0047756	38.7	20 31 23.35
14	134	53 42 48.8	42 45.4	144.49	0.46	.0048680	38.3	20 27 27.44
15	135	54 40 36.1	40 32.5	144.44	0.57	.0049594	37.9	20 23 31.53
16	136	55 38 22.2	38 18.5	144.39	0.66	.0050498	37.4	20 19 35.62
17	137	56 36 7.1	36 3.3	144.34	0.72	.0051391	36.9	20 15 39.71
18	138	57 33 50.7	33 46.7	144.29	0.75	.0052272	36.4	20 11 43.80
19	139	58 31 33.2	31 29.0	144.25	0.74	.0053139	35.8	20 7 47.88
20	140	59 29 14.7	29 10.3	144.21	0.71	.0053990	35.1	20 3 51.97
21	141	60 26 55.3	26 50.7	144.17	0.65	.0054823	34.3	19 59 56.06
22	142	61 24 34.9	24 30.1	144.13	0.57	.0055637	33.4	19 56 0.15
23	143	62 22 13.5	22 8.5	144.09	0.47	.0056430	32.6	19 52 4.23
24	144	63 19 51.0	19 45.8	144.04	0.35	.0057203	31.7	19 48 8.32
25	145	64 17 27.4	17 22.2	144.00	0.21	.0057956	30.8	19 44 12.41
26	146	65 15 2.8	14 57.5	143.95	−0.08	.0058686	29.8	19 40 16.50
27	147	66 12 37.0	12 31.5	143.90	+0.05	.0059391	28.9	19 36 20.59
28	148	67 10 9.9	10 4.2	143.85	0.16	.0060073	28.0	19 32 24.68
29	149	68 7 41.8	7 35.9	143.80	0.26	.0060733	27.1	19 28 28.77
30	150	69 5 12.5	5 6.4	143.75	0.34	.0061370	26.1	19 24 32.86
31	151	70 2 42.0	2 35.8	143.70	0.39	.0061984	25.2	19 20 36.94
32	152	71 0 10.3	0 3.9	143.65	+0.41	0.0062576	+24.3	19 16 41.03

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour. −9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
•	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 12.5	15 7.3	55 42.3	−1.65	55 23.3	−1.50	4 3.5	2.24	4.6
2	15 2.7	14 58.6	55 6.3	1.34	54 51.3	1.15	4 56.4	2.15	5.6
3	14 55.2	14 52.4	54 38.6	0.95	54 28.4	0.75	5 46.7	2.03	6.6
4	14 50.3	14 48.9	54 20.7	0.53	54 15.6	−0.32	6 34.0	1.91	7.6
5	14 48.2	14 48.3	54 13.1	−0.10	54 13.2	+0.12	7 18.5	1.80	8.6
6	14 49.0	14 50.4	54 15.8	+0.32	54 20.9	0.52	8 0.9	1.73	9.6
7	14 52.3	14 54.9	54 28.2	0.70	54 37.7	0.87	8 41.9	1.69	10.6
8	14 58.0	15 1.6	54 49.1	1.03	55 2.2	1.16	9 22.6	1.70	11.6
9	15 5.6	15 9.9	55 16.8	1.27	55 32.7	1.36	10 4.0	1.76	12.6
10	15 14.5	15 19.2	55 49.5	1.43	56 6.9	1.47	10 47.2	1.86	13.6
11	15 24.0	15 28.9	56 24.6	1.48	56 42.4	1.48	11 33.3	2.01	14.6
12	15 33.7	15 38.3	57 0.0	1.45	57 17.1	1.40	12 23.2	2.17	15.6
13	15 42.8	15 47.0	57 33.5	1.33	57 48.9	1.25	13 17.4	2.35	16.6
14	15 50.9	15 54.5	58 3.3	1.15	58 16.5	1.05	14 15.5	2.49	17.6
15	15 57.8	16 0.7	58 28.5	0.95	58 39.3	0.84	15 16.0	2.54	18.6
16	16 3.3	16 5.5	58 48.7	0.73	58 56.8	0.62	16 16.7	2.49	19.6
17	16 7.3	16 8.8	59 3.6	0.51	59 9.1	0.41	17 15.5	2.37	20.6
18	16 10.0	16 10.8	59 13.3	0.30	59 16.3	+0.20	18 11.1	2.24	21.6
19	16 11.3	16 11.5	59 18.2	+0.10	59 18.9	0.00	19 3.4	2.12	22.6
20	16 11.3	16 10.8	59 18.2	−0.11	59 16.2	−0.22	19 53.2	2.03	23.6
21	16 9.9	16 8.6	59 12.9	0.34	59 8.1	0.46	20 41.4	1.99	24.6
22	16 6.9	16 4.7	59 1.8	0.59	58 53.9	0.72	21 29.4	2.01	25.6
23	16 2.1	15 59.1	58 44.4	0.86	58 33.3	0.99	22 18.3	2.07	26.6
24	15 55.6	15 51.8	58 20.7	1.11	58 6.6	1.23	23 9.0	2.16	27.6
25	15 47.6	15 43.1	57 51.1	1.33	57 34.5	1.42	δ		28.6
26	15 38.3	15 33.3	57 17.0	1.49	56 58.7	1.53	0 1.8	2.24	0.1
27	15 28.3	15 23.2	56 40.1	1.55	56 21.4	1.54	0 56.3	2.29	1.1
28	15 18.2	15 13.3	56 2.9	1.51	55 45.0	1.45	1 51.5	2.29	2.1
29	15 8.6	15 4.3	55 28.0	1.37	55 12.1	1.26	2 45.8	2.23	3.1
30	15 0.4	14 56.9	54 57.7	1.13	54 45.0	0.97	3 37.9	2.10	4.1
31	14 54.0	14 51.6	54 34.2	0.80	54 25.6	0.62	4 26.9	1.97	5.1
32	14 49.9	14 48.9	54 19.3	−0.42	54 15.4	−0.22	5 12.8	1.85	6.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 32 39.10	2.3391	N.26 51 33.0	0.327
1	6 34 59.38	2.3368	26 51 48.2	0.182
2	6 37 19.52	2.3345	26 51 54.8	+0.038
3	6 39 39.52	2.3320	26 51 52.7	−0.106
4	6 41 59.37	2.3295	26 51 42.0	0.249
5	6 44 19.06	2.3268	26 51 22.8	0.391
6	6 46 38.59	2.3241	26 50 55.1	0.533
7	6 48 57.96	2.3213	26 50 18.9	0.675
8	6 51 17.16	2.3184	26 49 34.1	0.816
9	6 53 36.18	2.3155	26 48 40.9	0.957
10	6 55 55.02	2.3125	26 47 39.3	1.097
11	6 58 13.69	2.3095	26 46 29.3	1.236
12	7 0 32.17	2.3064	26 45 11.0	1.375
13	7 2 50.46	2.3031	26 43 44.3	1.514
14	7 5 8.55	2.2998	26 42 9.4	1.651
15	7 7 26.44	2.2964	26 40 26.2	1.788
16	7 9 44.13	2.2930	26 38 34.8	1.924
17	7 12 1.61	2.2895	26 36 35.3	2.060
18	7 14 18.88	2.2860	26 34 27.6	2.196
19	7 16 35.94	2.2824	26 32 11.8	2.330
20	7 18 52.78	2.2787	26 29 48.0	2.463
21	7 21 9.39	2.2750	26 27 16.3	2.595
22	7 23 25.78	2.2712	26 24 36.6	2.728
23	7 25 41.94	2.2674	N.26 21 48.9	2.860

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 27 57.88	2.2636	N.26 18 53.3	2.991
1	7 30 13.58	2.2597	26 15 49.9	3.122
2	7 32 29.04	2.2557	26 12 38.7	3.252
3	7 34 44.26	2.2517	26 9 19.7	3.381
4	7 36 59.23	2.2476	26 5 53.0	3.508
5	7 39 13.96	2.2435	26 2 18.7	3.635
6	7 41 28.44	2.2393	25 58 36.8	3.762
7	7 43 42.67	2.2350	25 54 47.3	3.888
8	7 45 56.65	2.2307	25 50 50.3	4.013
9	7 48 10.36	2.2264	25 46 45.7	4.138
10	7 50 23.81	2.2220	25 42 33.7	4.261
11	7 52 37.00	2.2177	25 38 14.4	4.383
12	7 54 49.94	2.2133	25 33 47.8	4.504
13	7 57 2.61	2.2088	25 29 13.9	4.625
14	7 59 15.01	2.2043	25 24 32.7	4.746
15	8 1 27.13	2.1998	25 19 44.3	4.866
16	8 3 38.98	2.1953	25 14 48.8	4.984
17	8 5 50.57	2.1908	25 9 46.2	5.102
18	8 8 1.88	2.1862	25 4 36.6	5.219
19	8 10 12.91	2.1816	24 59 20.0	5.335
20	8 12 23.67	2.1770	24 53 56.4	5.450
21	8 14 34.15	2.1724	24 48 25.9	5.565
22	8 16 44.35	2.1677	24 42 48.6	5.678
23	8 18 54.27	2.1630	24 37 4.5	5.790
24	8 21 3.91	2.1583	N.24 31 13.7	5.902

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 21 3.91	2.1583	N.24 31 13.7	5.902
1	8 23 13.27	2.1536	24 25 16.2	6.014
2	8 25 22.34	2.1488	24 19 12.1	6.124
3	8 27 31.12	2.1441	24 13 1.3	6.234
4	8 29 39.62	2.1393	24 6 44.0	6.342
5	8 31 47.84	2.1346	24 0 20.3	6.449
6	8 33 55.78	2.1299	23 53 50.1	6.556
7	8 36 3.43	2.1252	23 47 13.5	6.663
8	8 38 10.79	2.1204	23 40 30.6	6.768
9	8 40 17.87	2.1156	23 33 41.4	6.872
10	8 42 24.66	2.1108	23 26 46.0	6.975
11	8 44 31.16	2.1060	23 19 44.4	7.077
12	8 46 37.38	2.1012	23 12 36.7	7.179
13	8 48 43.31	2.0964	23 5 22.9	7.280
14	8 50 48.96	2.0917	22 58 3.1	7.380
15	8 52 54.32	2.0870	22 50 37.3	7.479
16	8 54 59.40	2.0823	22 43 5.5	7.577
17	8 57 4.20	2.0776	22 35 27.9	7.674
18	8 59 8.71	2.0729	22 27 44.6	7.771
19	9 1 12.94	2.0682	22 19 55.5	7.867
20	9 3 16.89	2.0635	22 12 0.6	7.962
21	9 5 20.56	2.0588	22 3 59.9	8.057
22	9 7 23.95	2.0542	21 55 53.6	8.150
23	9 9 27.06	2.0495	N.21 47 41.8	8.242

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 11 29.89	2.0448	N.21 39 24.6	8.333
1	9 13 32.44	2.0403	21 31 1.9	8.424
2	9 15 34.72	2.0358	21 22 33.7	8.514
3	9 17 36.74	2.0313	21 14 0.1	8.604
4	9 19 38.48	2.0268	21 5 21.2	8.692
5	9 21 39.95	2.0223	20 56 37.1	8.780
6	9 23 41.14	2.0178	20 47 47.7	8.866
7	9 25 42.07	2.0133	20 38 53.1	8.952
8	9 27 42.73	2.0089	20 29 53.4	9.036
9	9 29 43.13	2.0045	20 20 48.7	9.120
10	9 31 43.27	2.0002	20 11 38.9	9.204
11	9 33 43.15	1.9958	20 2 24.1	9.287
12	9 35 42.76	1.9915	19 53 4.4	9.369
13	9 37 42.12	1.9872	19 43 39.8	9.450
14	9 39 41.23	1.9829	19 34 10.4	9.530
15	9 41 40.08	1.9788	19 24 36.2	9.609
16	9 43 38.68	1.9747	19 14 57.3	9.688
17	9 45 37.04	1.9706	19 5 13.7	9.766
18	9 47 35.15	1.9665	18 55 25.4	9.844
19	9 49 33.01	1.9625	18 45 32.5	9.920
20	9 51 30.64	1.9585	18 35 35.1	9.996
21	9 53 28.03	1.9545	18 25 33.1	10.070
22	9 55 25.18	1.9506	18 15 26.7	10.144
23	9 57 22.10	1.9467	18 5 15.9	10.216
24	9 59 18.78	1.9428	N.17 55 0.7	10.289

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 5.					WEDNESDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 59 18.78	1.9428	N.17 55 0.7	10.289	0	11 29 6.47	1.8203	N. 8 31 29.0	12.923
1	10 1 15.23	1.9391	17 44 41.2	10.361	1	11 30 55.65	1.8192	8 18 32.5	12.961
2	10 3 11.46	1.9354	17 34 17.4	10.432	2	11 32 44.77	1.8182	8 5 33.7	12.999
3	10 5 7.47	1.9317	17 23 49.4	10.502	3	11 34 33.83	1.8172	7 52 32.7	13.035
4	10 7 3.26	1.9280	17 13 17.2	10.572	4	11 36 22.83	1.8163	7 39 29.5	13.071
5	10 8 58.83	1.9243	17 2 40.9	10.640	5	11 38 11.78	1.8155	7 26 24.1	13.106
6	10 10 54.17	1.9207	16 52 0.4	10.708	6	11 40 0.68	1.8147	7 13 16.7	13.141
7	10 12 49.30	1.9172	16 41 15.9	10.775	7	11 41 49.54	1.8140	7 0 7.2	13.174
8	10 14 44.23	1.9138	16 30 27.4	10.842	8	11 43 38.36	1.8133	6 46 55.7	13.207
9	10 16 38.96	1.9104	16 19 34.9	10.907	9	11 45 27.13	1.8128	6 33 42.3	13.239
10	10 18 33.48	1.9071	16 8 38.5	10.972	10	11 47 15.87	1.8123	6 20 26.9	13.272
11	10 20 27.80	1.9037	15 57 38.2	11.036	11	11 49 4.59	1.8119	6 7 9.6	13.303
12	10 22 21.92	1.9004	15 46 34.1	11.100	12	11 50 53.30	1.8115	5 53 50.4	13.334
13	10 24 15.85	1.8972	15 35 26.2	11.163	13	11 52 41.98	1.8112	5 40 29.4	13.364
14	10 26 9.59	1.8940	15 24 14.6	11.226	14	11 54 30.64	1.8109	5 27 6.7	13.393
15	10 28 3.13	1.8909	15 12 59.2	11.287	15	11 56 19.28	1.8107	5 13 42.2	13.422
16	10 29 56.49	1.8878	15 1 40.2	11.347	16	11 58 7.92	1.8106	5 0 16.0	13.451
17	10 31 49.67	1.8848	14 50 17.6	11.407	17	11 59 56.56	1.8106	4 46 48.2	13.479
18	10 33 42.67	1.8819	14 38 51.4	11.467	18	12 1 45.19	1.8107	4 33 18.9	13.505
19	10 35 35.49	1.8790	14 27 21.6	11.526	19	12 3 33.83	1.8108	4 19 48.0	13.529
20	10 37 28.14	1.8762	14 15 48.4	11.583	20	12 5 22.48	1.8109	4 6 15.5	13.554
21	10 39 20.63	1.8734	14 4 11.8	11.640	21	12 7 11.13	1.8111	3 52 41.6	13.578
22	10 41 12.95	1.8707	13 52 31.7	11.696	22	12 8 59.80	1.8114	3 39 6.2	13.601
23	10 43 5.11	1.8680	N.13 40 48.3	11.752	23	12 10 48.50	1.8118	N. 3 25 29.5	13.623
	TUESDAY 6.					THURSDAY 8.			
0	10 44 57.10	1.8654	N.13 29 1.5	11.808	0	12 12 37.22	1.8123	N. 3 11 51.4	13.646
1	10 46 48.94	1.8628	13 17 11.4	11.861	1	12 14 25.97	1.8128	2 58 12.0	13.667
2	10 48 40.63	1.8603	13 5 18.1	11.914	2	12 16 14.75	1.8134	2 44 31.4	13.688
3	10 50 32.17	1.8578	12 53 21.7	11.967	3	12 18 3.57	1.8141	2 30 49.5	13.707
4	10 52 23.56	1.8554	12 41 22.1	12.020	4	12 19 52.43	1.8148	2 17 6.4	13.726
5	10 54 14.81	1.8531	12 29 19.3	12.072	5	12 21 41.33	1.8155	2 3 22.3	13.745
6	10 56 5.93	1.8508	12 17 13.4	12.123	6	12 23 30.28	1.8163	1 49 37.1	13.763
7	10 57 56.91	1.8486	12 5 4.5	12.173	7	12 25 19.28	1.8173	1 35 50.8	13.780
8	10 59 47.76	1.8464	11 52 52.6	12.222	8	12 27 8.34	1.8183	1 22 3.6	13.796
9	11 1 38.48	1.8443	11 40 37.8	12.270	9	12 28 57.47	1.8194	1 8 15.4	13.810
10	11 3 29.08	1.8423	11 28 20.1	12.318	10	12 30 46.66	1.8205	0 54 26.3	13.825
11	11 5 19.55	1.8403	11 15 59.5	12.366	11	12 32 35.92	1.8217	0 40 36.4	13.839
12	11 7 9.91	1.8384	11 3 36.1	12.414	12	12 34 25.26	1.8230	0 26 45.7	13.852
13	11 9 0.16	1.8365	10 51 9.9	12.460	13	12 36 14.68	1.8243	N. 0 12 54.2	13.864
14	11 10 50.30	1.8347	10 38 41.0	12.506	14	12 38 4.18	1.8257	S. 0 0 58.0	13.875
15	11 12 40.33	1.8330	10 26 9.3	12.550	15	12 39 53.76	1.8272	0 14 50.8	13.885
16	11 14 30.26	1.8313	10 13 34.9	12.594	16	12 41 43.43	1.8288	0 28 44.2	13.895
17	11 16 20.09	1.8297	10 0 57.9	12.638	17	12 43 33.20	1.8305	0 42 38.2	13.904
18	11 18 9.82	1.8281	9 48 18.4	12.681	18	12 45 23.08	1.8322	0 56 32.8	13.913
19	11 19 59.46	1.8267	9 35 36.3	12.723	19	12 47 13.06	1.8339	1 10 27.8	13.920
20	11 21 49.02	1.8253	9 22 51.7	12.765	20	12 49 3.15	1.8357	1 24 23.2	13.927
21	11 23 38.50	1.8240	9 10 4.6	12.805	21	12 50 53.34	1.8376	1 38 19.0	13.932
22	11 25 27.90	1.8227	8 57 15.1	12.845	22	12 52 43.65	1.8396	1 52 15.1	13.937
23	11 27 17.22	1.8215	8 44 23.2	12.884	23	12 54 34.09	1.8417	2 6 11.4	13.941
24	11 29 6.47	1.8203	N. 8 31 29.0	12.923	24	12 56 24.65	1.8438	S. 2 20 8.0	13.945

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 9.					SUNDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 56 24.65	1.8438	S. 2 20 8.0	13.945	0	14 28 42.53	2.0285	S. 13 14 59.9	12.935
1	12 58 15.34	1.8460	2 34 4.8	13.947	1	14 30 44.40	2.0340	13 27 54.6	12.886
2	13 0 6.17	1.8482	2 48 1.6	13.948	2	14 32 46.60	2.0395	13 40 46.2	12.836
3	13 1 57.13	1.8506	3 1 58.5	13.948	3	14 34 49.13	2.0451	13 53 34.8	12.784
4	13 3 48.23	1.8530	3 15 55.4	13.948	4	14 36 52.00	2.0507	14 6 20.3	12.731
5	13 5 39.48	1.8555	3 29 52.2	13.947	5	14 38 55.21	2.0564	14 19 2.5	12.676
6	13 7 30.89	1.8580	3 43 49.0	13.945	6	14 40 58.76	2.0621	14 31 41.5	12.621
7	13 9 22.45	1.8607	3 57 45.6	13.942	7	14 43 2.66	2.0679	14 44 17.1	12.564
8	13 11 14.17	1.8634	4 11 42.0	13.938	8	14 45 6.91	2.0738	14 56 49.2	12.506
9	13 13 6.06	1.8662	4 25 38.1	13.933	9	14 47 11.51	2.0797	15 9 17.8	12.446
10	13 14 58.12	1.8691	4 39 33.9	13.928	10	14 49 16.46	2.0856	15 21 42.7	12.385
11	13 16 50.35	1.8720	4 53 29.3	13.921	11	14 51 21.77	2.0916	15 34 3.9	12.322
12	13 18 42.74	1.8749	5 7 24.4	13.914	12	14 53 27.45	2.0977	15 46 21.4	12.259
13	13 20 35.32	1.8780	5 21 19.0	13.905	13	14 55 33.49	2.1038	15 58 35.0	12.194
14	13 22 28.09	1.8811	5 35 13.0	13.894	14	14 57 39.90	2.1099	16 10 44.6	12.127
15	13 24 21.05	1.9843	5 49 6.3	13.883	15	14 59 46.67	2.1161	16 22 50.2	12.058
16	13 26 14.20	1.8876	6 2 58.9	13.872	16	15 1 53.82	2.1223	16 34 51.7	11.989
17	13 28 7.55	1.8909	6 16 50.9	13.859	17	15 4 1.35	2.1286	16 46 48.9	11.918
18	13 30 1.11	1.8943	6 30 42.1	13.846	18	15 6 9.25	2.1349	16 58 41.9	11.846
19	13 31 54.87	1.8978	6 44 32.5	13.832	19	15 8 17.53	2.1412	17 10 30.5	11.772
20	13 33 48.84	1.9014	6 58 21.9	13.816	20	15 10 26.20	2.1476	17 22 14.6	11.696
21	13 35 43.03	1.9050	7 12 10.4	13.799	21	15 12 35.25	2.1541	17 33 54.1	11.619
22	13 37 37.44	1.9087	7 25 57.9	13.782	22	15 14 44.69	2.1606	17 45 29.0	11.541
23	13 39 32.07	1.9125	S. 7 39 44.3	13.763	23	15 16 54.52	2.1671	S. 17 56 59.1	11.462
	SATURDAY 10.					MONDAY 12.			
0	13 41 26.93	1.9163	S. 7 53 29.6	13.744	0	15 19 4.73	2.1736	S. 18 8 24.5	11.382
1	13 43 22.02	1.9202	8 7 13.7	13.724	1	15 21 15.34	2.1801	18 19 45.0	11.300
2	13 45 17.35	1.9242	8 20 56.5	13.702	2	15 23 26.35	2.1867	18 31 0.4	11.216
3	13 47 12.92	1.9282	8 34 37.9	13.678	3	15 25 37.75	2.1934	18 42 10.7	11.130
4	13 49 8.73	1.9323	8 48 17.9	13.654	4	15 27 49.55	2.2001	18 53 15.9	11.042
5	13 51 4.79	1.9365	9 1 56.4	13.629	5	15 30 1.76	2.2068	19 4 15.8	10.953
6	13 53 1.10	1.9407	9 15 33.5	13.604	6	15 32 14.36	2.2135	19 15 10.3	10.863
7	13 54 57.67	1.9450	9 29 9.0	13.577	7	15 34 27.36	2.2202	19 25 59.4	10.772
8	13 56 54 50	1.9493	9 42 42.8	13.549	8	15 36 40.77	2.2269	19 36 42.9	10.680
9	13 58 51.59	1.9538	9 56 14.8	13.519	9	15 38 54.59	2.2336	19 47 20.9	10.585
10	14 0 48.95	1.9584	10 9 45.0	13.488	10	15 41 8.81	2.2404	19 57 53.1	10.488
11	14 2 46.59	1.9630	10 23 13.4	13.457	11	15 43 23.43	2.2471	20 8 19.5	10.389
12	14 4 44.51	1.9677	10 36 39.9	13.425	12	15 45 38.46	2.2538	20 18 39.9	10.290
13	14 6 42.71	1.9724	10 50 4.4	13.390	13	15 47 53.89	2.2606	20 28 54.3	10.189
14	14 8 41.19	1.9771	11 3 26.7	13.355	14	15 50 9.74	2.2674	20 39 2.7	10.087
15	14 10 39.96	1.9820	11 16 46.9	13.318	15	15 52 26.00	2.2742	20 49 4.9	9.984
16	14 12 39.02	1.9869	11 30 4.9	13.280	16	15 54 42.66	2.2811	20 59 0.8	9.879
17	14 14 38.38	1.9919	11 43 20.6	13.240	17	15 56 59.73	2.2879	21 8 50.3	9.772
18	14 16 38.04	1.9969	11 56 33.9	13.201	18	15 59 17.21	2.2947	21 18 33.4	9.663
19	14 18 38.00	2.0020	12 9 44.8	13.161	19	16 1 35.10	2.3015	21 28 9.9	9.554
20	14 20 38.27	2.0072	12 22 53.1	13.119	20	16 3 53.39	2.3083	21 37 39.7	9.443
21	14 22 38.86	2.0125	12 35 58.9	13.075	21	16 6 12.09	2.3151	21 47 2.9	9.330
22	14 24 39.76	2.0178	12 49 2.0	13.030	22	16 8 31.20	2.3218	21 56 19.3	9.215
23	14 26 40.98	2.0231	13 2 2.3	12.983	23	16 10 50.71	2.3286	22 5 28.7	9.098
24	14 28 42.53	2.0285	S. 13 14 59.9	12.935	24	16 13 10.62	2.3353	S. 22 14 31.0	8.979

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 13 10.62	2.3353	S.22 14 31.0	8.979
1	16 15 30.94	2.3420	22 23 26.2	8.860
2	16 17 51.66	2.3487	22 32 14.3	8.740
3	16 20 12.78	2.3553	22 40 55.1	8.618
4	16 22 34.30	2.3619	22 49 28.5	8.494
5	16 24 56.21	2.3685	22 57 54.4	8.369
6	16 27 18.51	2.3750	23 6 12.8	8.243
7	16 29 41.21	2.3815	23 14 23.6	8.115
8	16 32 4.30	2.3880	23 22 26.6	7.984
9	16 34 27.77	2.3944	23 30 21.7	7.852
10	16 36 51.63	2.4008	23 38 8.9	7.720
11	16 39 15.87	2.4071	23 45 48.2	7.586
12	16 41 40.49	2.4134	23 53 19.4	7.451
13	16 44 5.49	2.4196	24 0 42.4	7.314
14	16 46 30.86	2.4258	24 7 57.2	7.176
15	16 48 56.59	2.4319	24 15 3.6	7.036
16	16 51 22.69	2.4360	24 22 1.6	6.895
17	16 53 49.15	2.4439	24 28 51.1	6.753
18	16 56 15.97	2.4498	24 35 32.1	6.610
19	16 58 43.14	2.4556	24 42 4.4	6.465
20	17 1 10.66	2.4614	24 48 27.9	6.319
21	17 3 38.52	2.4671	24 54 42.6	6.171
22	17 6 6.72	2.4728	25 0 48.4	6.022
23	17 8 35.25	2.4783	S.25 6 45.2	5.871

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 11 4.12	2.4838	S.25 12 33.0	5.720
1	17 13 33.31	2.4891	25 18 11.7	5.567
2	17 16 2.81	2.4944	25 23 41.1	5.412
3	17 18 32.63	2.4995	25 29 1.2	5.257
4	17 21 2.76	2.5046	25 34 12.0	5.101
5	17 23 33.18	2.5095	25 39 13.4	4.944
6	17 26 3.90	2.5144	25 44 5.4	4.786
7	17 28 34.91	2.5191	25 48 47.8	4.627
8	17 31 6.20	2.5238	25 53 20.6	4.466
9	17 33 37.77	2.5283	25 47 43.6	4.304
10	17 36 9.61	2.5327	25 51 56.9	4.141
11	17 38 41.70	2.5370	25 56 0.4	3.977
12	17 41 14.05	2.5412	26 9 54.2	3.813
13	17 43 46.65	2.5453	26 13 38.1	3.648
14	17 46 19.49	2.5493	26 17 11.9	3.480
15	17 48 52.57	2.5531	26 20 35.6	3.311
16	17 51 25.87	2.5568	26 23 49.3	3.143
17	17 53 59.39	2.5603	26 26 52.9	2.974
18	17 56 33.12	2.5638	26 29 46.3	2.805
19	17 59 7.05	2.5672	26 32 29.5	2.634
20	18 1 41.18	2.5704	26 35 2.4	2.463
21	18 4 15.50	2.5734	26 37 25.0	2.291
22	18 6 49.99	2.5763	26 39 37.3	2.118
23	18 9 24.65	2.5790	26 41 39.2	1.944
24	18 11 59.47	2.5815	S.26 43 30.6	1.770

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 11 59.47	2.5815	S.26 43 30.6	1.770
1	18 14 34.44	2.5840	26 45 11.6	1.595
2	18 17 9.56	2.5864	26 46 42.1	1.420
3	18 19 44.82	2.5886	26 48 2.0	1.245
4	18 22 20.21	2.5907	26 49 11.4	1.069
5	18 24 55.71	2.5926	26 50 10.2	0.893
6	18 27 31.32	2.5944	26 50 58.5	0.717
7	18 30 7.02	2.5960	26 51 36.2	0.539
8	18 32 42.82	2.5974	26 52 3.1	0.361
9	18 35 18.71	2.5986	26 52 19.3	0.183
10	18 37 54.67	2.5998	26 52 24.9	−0.005
11	18 40 30.69	2.6008	26 52 19.8	+0.174
12	18 43 6.77	2.6017	26 52 4.0	0.353
13	18 45 42.90	2.6024	26 51 37.5	0.532
14	18 48 19.06	2.6029	26 51 0.2	0.712
15	18 50 55.25	2.6033	26 50 12.1	0.891
16	18 53 31.47	2.6036	26 49 13.3	1.070
17	18 56 7.69	2.6037	26 48 3.8	1.248
18	18 58 43.90	2.6036	26 46 43.6	1.427
19	19 1 20.11	2.6033	26 45 12.6	1.606
20	19 3 56.31	2.6030	26 43 30.9	1.785
21	19 6 32.49	2.6026	26 41 38.4	1.964
22	19 9 8.63	2.6020	26 39 35.2	2.142
23	19 11 44.73	2.6012	S.26 37 21.3	2.320

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 14 20.77	2.6001	S.26 34 56.8	2.498
1	19 16 56.75	2.5991	26 32 21.6	2.676
2	19 19 32.67	2.5979	26 29 35.7	2.854
3	19 22 8.51	2.5965	26 26 39.1	3.031
4	19 24 44.27	2.5950	26 23 31.9	3.208
5	19 27 19.92	2.5933	26 20 14.2	3.384
6	19 29 55.47	2.5916	26 16 45.9	3.560
7	19 32 30.91	2.5897	26 13 7.0	3.735
8	19 35 6.24	2.5877	26 9 17.6	3.910
9	19 37 41.44	2.5855	26 5 17.8	4.084
10	19 40 16.51	2.5832	26 1 7.5	4.258
11	19 42 51.44	2.5808	25 56 46.8	4.431
12	19 45 26.21	2.5783	25 52 15.8	4.604
13	19 48 0.83	2.5756	25 47 34.4	4.776
14	19 50 35.29	2.5727	25 42 42.7	4.947
15	19 53 9.57	2.5698	25 37 40.8	5.117
16	19 55 43.67	2.5668	25 32 28.7	5.287
17	19 58 17.59	2.5636	25 27 6.5	5.455
18	20 0 51.32	2.5604	25 21 34.1	5.623
19	20 3 24.85	2.5570	25 15 51.7	5.790
20	20 5 58.18	2.5535	25 9 59.3	5.957
21	20 8 31.29	2.5499	25 3 56.9	6.122
22	20 11 4.18	2.5463	24 57 44.6	6.286
23	20 13 36.85	2.5425	24 51 22.5	6.449
24	20 16 9.30	2.5387	S.24 44 50.7	6.612

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 16 9.30	2.5387	S.24 44 50.7	6.612
1	20 18 41.51	2.5348	24 38 9.1	6.773
2	20 21 13.48	2.5308	24 31 17.9	6.934
3	20 23 45.21	2.5266	24 24 17.0	7.094
4	20 26 16.69	2.5224	24 17 6.6	7.252
5	20 28 47.91	2.5181	24 9 46.8	7.408
6	20 31 18.86	2.5137	24 2 17.6	7.564
7	20 33 49.55	2.5092	23 54 39.1	7.719
8	20 36 19.98	2.5047	23 46 51.3	7.873
9	20 38 50.13	2.5001	23 38 54.3	8.026
10	20 41 20.01	2.4956	23 30 48.2	8.178
11	20 43 49.60	2.4908	23 22 33.0	8.328
12	20 46 18.91	2.4861	23 14 8.9	8.477
13	20 48 47.93	2.4813	23 5 35.9	8.624
14	20 51 16.66	2.4764	22 56 54.1	8.770
15	20 53 45.09	2.4714	22 48 3.5	8.915
16	20 56 13.23	2.4664	22 39 4.3	9.059
17	20 58 41.07	2.4614	22 29 56.5	9.201
18	21 1 8.60	2.4564	22 20 40.1	9.342
19	21 3 35.83	2.4513	22 11 15.3	9.482
20	21 6 2.75	2.4462	22 1 42.2	9.620
21	21 8 29.37	2.4410	21 52 0.9	9.756
22	21 10 55.67	2.4358	21 42 11.4	9.892
23	21 13 21.66	2.4305	S.21 32 13.8	10.027

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 15 47.33	2.4252	S.21 22 8.1	10.160
1	21 18 12.69	2.4199	21 11 54.5	10.291
2	21 20 37.73	2.4146	21 1 33.1	10.421
3	21 23 2.45	2.4093	20 51 4.0	10.549
4	21 25 26.86	2.4040	20 40 27.2	10.676
5	21 27 50.94	2.3987	20 29 42.9	10.801
6	21 30 14.70	2.3934	20 18 50.9	10.926
7	21 32 38.14	2.3881	20 7 51.6	11.049
8	21 35 1.27	2.3827	19 56 45.0	11.171
9	21 37 24.07	2.3774	19 45 31.1	11.291
10	21 39 46.55	2.3720	19 34 10.1	11.409
11	21 42 8.71	2.3666	19 22 42.1	11.525
12	21 44 30.55	2.3613	19 11 7.1	11.640
13	21 46 52.07	2.3560	18 59 25.2	11.754
14	21 49 13.28	2.3507	18 47 36.6	11.866
15	21 51 34.16	2.3454	18 35 41.3	11.976
16	21 53 54.72	2.3401	18 23 39.4	12.085
17	21 56 14.97	2.3348	18 11 31.0	12.192
18	21 58 34.91	2.3296	17 59 16.2	12.299
19	22 0 54.53	2.3244	17 46 55.1	12.404
20	22 3 13.84	2.3193	17 34 27.7	12.507
21	22 5 32.84	2.3141	17 21 54.2	12.608
22	22 7 51.53	2.3090	17 9 14.6	12.708
23	22 10 9.92	2.3039	16 56 29.1	12.807
24	22 12 27.99	2.2987	S.16 43 37.7	12.904

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 12 27.99	2.2987	S.16 43 37.7	12.904
1	22 14 45.76	2.2937	16 30 40.6	12.999
2	22 17 3.24	2.2887	16 17 37.8	13.093
3	22 19 20.41	2.2838	16 4 29.4	13.185
4	22 21 37.29	2.2789	15 51 15.5	13.276
5	22 23 53.88	2.2740	15 37 56.2	13.365
6	22 26 10.17	2.2691	15 24 31.7	13.453
7	22 28 26.17	2.2643	15 11 1.9	13.539
8	22 30 41.89	2.2596	14 57 27.0	13.623
9	22 32 57.33	2.2549	14 43 47.1	13.706
10	22 35 12.49	2.2503	14 30 2.2	13.787
11	22 37 27.37	2.2457	14 16 12.5	13.867
12	22 39 41.98	2.2411	14 2 18.0	13.946
13	22 41 56.31	2.2366	13 48 18.8	14.024
14	22 44 10.38	2.2322	13 34 15.1	14.099
15	22 46 24.19	2.2279	13 20 7.0	14.172
16	22 48 37.74	2.2236	13 5 54.5	14.243
17	22 50 51.03	2.2194	12 51 37.7	14.314
18	22 53 4.06	2.2152	12 37 16.7	14.384
19	22 55 16.84	2.2110	12 22 51.6	14.451
20	22 57 29.38	2.2070	12 8 22.5	14.518
21	22 59 41.68	2.2030	11 53 49.4	14.583
22	23 1 53.74	2.1990	11 39 12.5	14.646
23	23 4 5.56	2.1951	S.11 24 31.9	14.707

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 6 17.15	2.1913	S.11 9 47.6	14.767
1	23 8 28.52	2.1876	10 54 59.7	14.825
2	23 10 39.66	2.1839	10 40 8.4	14.881
3	23 12 50.58	2.1802	10 25 13.8	14.937
4	23 15 1.29	2.1767	10 10 15.9	14.993
5	23 17 11.79	2.1733	9 55 14.8	15.045
6	23 19 22.09	2.1699	9 40 10.5	15.096
7	23 21 32.18	2.1666	9 25 3.2	15.146
8	23 23 42.08	2.1633	9 9 53.0	15.194
9	23 25 51.78	2.1601	8 54 40.0	15.239
10	23 28 1.29	2.1570	8 39 24.2	15.284
11	23 30 10.62	2.1540	8 24 5.8	15.327
12	23 32 19.77	2.1511	8 8 44.9	15.369
13	23 34 28.75	2.1482	7 53 21.5	15.410
14	23 36 37.56	2.1453	7 37 55.7	15.450
15	23 38 46.19	2.1426	7 22 27.5	15.488
16	23 40 54.66	2.1400	7 6 57.1	15.524
17	23 43 2.98	2.1374	6 51 24.7	15.558
18	23 45 11.15	2.1349	6 35 50.2	15.591
19	23 47 19.17	2.1325	6 20 13.7	15.623
20	23 49 27.05	2.1301	6 4 35.4	15.653
21	23 51 34.78	2.1278	5 48 55.4	15.681
22	23 53 42.38	2.1256	5 33 13.7	15.709
23	23 55 49.85	2.1235	5 17 30.4	15.735
24	23 57 57.20	2.1215	S. 5 1 45.5	15.760

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 21.					**FRIDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 57 57.20	2.1215	S. 5 1 45.5	15.760	0	1 38 56.18	2.1154	N. 7 35 21.6	15.240
1	0 0 4.43	2.1196	4 45 59.2	15.783	1	1 41 3.15	2.1171	7 50 34.7	15.195
2	0 2 11.54	2.1177	4 30 11.6	15.804	2	1 43 10.22	2.1188	8 5 45.0	15.148
3	0 4 18.54	2.1159	4 14 22.8	15.823	3	1 45 17.40	2.1206	8 20 52.5	15.100
4	0 6 25.44	2.1142	3 58 32.8	15.841	4	1 47 24.69	2.1224	8 35 57.1	15.050
5	0 8 32.24	2.1126	3 42 41.8	15.858	5	1 49 32.09	2.1243	8 50 58.6	14.998
6	0 10 38.94	2.1110	3 26 49.8	15.874	6	1 51 39.60	2.1262	9 5 56.9	14.946
7	0 12 45.55	2.1096	3 10 56.9	15.888	7	1 53 47.23	2.1282	9 20 52.1	14.892
8	0 14 52.07	2.1082	2 55 3.2	15.901	8	1 55 54.99	2.1303	9 35 44.0	14.837
9	0 16 58.52	2.1069	2 39 8.7	15.913	9	1 58 2.87	2.1325	9 50 32.6	14.781
10	0 19 4.90	2.1056	2 23 13.6	15.923	10	2 0 10.88	2.1347	10 5 17.8	14.723
11	0 21 11.20	2.1044	2 7 18.0	15.931	11	2 2 19.03	2.1369	10 19 59.4	14.663
12	0 23 17.42	2.1032	1 51 21.9	15.939	12	2 4 27.31	2.1392	10 34 37.5	14.603
13	0 25 23.58	2.1022	1 35 25.4	15.944	13	2 6 35.73	2.1416	10 49 11.8	14.541
14	0 27 29.69	2.1014	1 19 28.7	15.948	14	2 8 44.30	2.1440	11 3 42.4	14.479
15	0 29 35.75	2.1006	1 3 31.7	15.951	15	2 10 53.01	2.1465	11 18 9.2	14.414
16	0 31 41.76	2.0998	0 47 34.6	15.952	16	2 13 1.87	2.1490	11 32 32.0	14.347
17	0 33 47.72	2.0991	0 31 37.5	15.951	17	2 15 10.88	2.1515	11 46 50.8	14.279
18	0 35 53.64	2.0986	S. 0 15 40.5	15.949	18	2 17 20.04	2.1541	12 1 5.6	14.211
19	0 37 59.53	2.0981	N. 0 0 16.4	15.946	19	2 19 29.36	2.1567	12 15 16.2	14.141
20	0 40 5.39	2.0976	0 16 13.0	15.942	20	2 21 38.85	2.1594	12 29 22.5	14.069
21	0 42 11.23	2.0972	0 32 9.4	15.936	21	2 23 48.50	2.1622	12 43 24.4	13.995
22	0 44 17.05	2.0969	0 48 5.4	15.928	22	2 25 58.31	2.1650	12 57 21.9	13.921
23	0 46 22.85	2.0967	N. 1 4 0.8	15.919	23	2 28 8.29	2.1679	N.13 11 14.9	13.845
	THURSDAY 22.					**SATURDAY 24.**			
0	0 48 28.64	2.0965	N. 1 19 55.7	15.909	0	2 30 18.45	2.1706	N.13 25 3.4	13.769
1	0 50 34.43	2.0964	1 35 50.0	15.898	1	2 32 28.78	2.1737	13 38 47.2	13.690
2	0 52 40.22	2.0964	1 51 43.5	15.885	2	2 34 39.28	2.1766	13 52 26.2	13.611
3	0 54 46.00	2.0965	2 7 36.1	15.870	3	2 36 49.96	2.1795	14 6 0.5	13.530
4	0 56 51.79	2.0967	2 23 27.9	15.854	4	2 39 0.82	2.1825	14 19 29.9	13.447
5	0 58 57.60	2.0970	2 39 18.7	15.837	5	2 41 11.86	2.1855	14 32 54.2	13.362
6	1 1 3.43	2.0973	2 55 8.4	15.818	6	2 43 23.08	2.1886	14 46 13.4	13.277
7	1 3 9.28	2.0977	3 10 57.0	15.798	7	2 45 34.49	2.1917	14 59 27.5	13.191
8	1 5 15.15	2.0981	3 26 44.3	15.776	8	2 47 46.09	2.1948	15 12 36.4	13.104
9	1 7 21.05	2.0987	3 42 30.2	15.753	9	2 49 57.87	2.1980	15 25 40.1	13.016
10	1 9 26.98	2.0993	3 58 14.7	15.720	10	2 52 9.84	2.2012	15 38 38.4	12.925
11	1 11 32.96	2.1000	4 13 57.7	15.703	11	2 54 22.01	2.2044	15 51 31.2	12.833
12	1 13 38.98	2.1008	4 29 39.1	15.676	12	2 56 34.38	2.2077	16 4 18.4	12.741
13	1 15 45.05	2.1017	4 45 18.9	15.648	13	2 58 46.94	2.2109	16 17 0.1	12.647
14	1 17 51.17	2.1026	5 0 56.9	15.618	14	3 0 59.70	2.2142	16 29 36.1	12.551
15	1 19 57.35	2.1036	5 16 33.0	15.586	15	3 3 12.65	2.2175	16 42 6.3	12.454
16	1 22 3.59	2.1046	5 32 7.2	15.554	16	3 5 25.80	2.2208	16 54 30.7	12.357
17	1 24 9.89	2.1057	5 47 39.4	15.520	17	3 7 39.15	2.2241	17 6 49.2	12.258
18	1 26 16.26	2.1069	6 3 9.6	15.484	18	3 9 52.70	2.2275	17 19 1.7	12.158
19	1 28 22.71	2.1081	6 18 37.6	15.447	19	3 12 6.45	2.2309	17 31 8.2	12.057
20	1 30 29.24	2.1094	6 34 3.3	15.408	20	3 14 20.40	2.2343	17 43 8.5	11.954
21	1 32 35.84	2.1108	6 49 26.6	15.367	21	3 16 34.56	2.2376	17 55 2.6	11.850
22	1 34 42.53	2.1123	7 4 47.5	15.326	22	3 18 48.92	2.2410	18 6 50.5	11.745
23	1 36 49.31	2.1138	7 20 5.8	15.284	23	3 21 3.48	2.2444	18 18 32.0	11.638
24	1 38 56.18	2.1154	N. 7 35 21.6	15.240	24	3 23 18.24	2.2478	N.18 30 7.1	11.531

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 25.			
	h m s	s	° ′ ″	″
0	3 23 18.24	2.2478	N.18 30 7.1	11.531
1	3 25 33.21	2.2512	18 41 35.7	11.422
2	3 27 48.38	2.2545	18 52 57.8	11.312
3	3 30 3.75	2.2578	19 4 13.2	11.201
4	3 32 19.32	2.2612	19 15 21.9	11.089
5	3 34 35.10	2.2646	19 26 23.8	10.975
6	3 36 51.07	2.2680	19 37 18.9	10.861
7	3 39 7.25	2.2713	19 48 7.1	10.745
8	3 41 23.62	2.2746	19 58 48.3	10.629
9	3 43 40.20	2.2779	20 9 22.6	10.511
10	3 45 56.97	2.2812	20 19 49.8	10.392
11	3 48 13.94	2.2845	20 30 9.7	10.271
12	3 50 31.11	2.2877	20 40 22.4	10.150
13	3 52 48.47	2.2909	20 50 27.8	10.029
14	3 55 6.02	2.2941	21 0 25.9	9.907
15	3 57 23.77	2.2973	21 10 16.6	9.783
16	3 59 41.70	2.3005	21 19 59.8	9.658
17	4 1 59.82	2.3036	21 29 35.4	9.531
18	4 4 18.13	2.3067	21 39 3.5	9.405
19	4 6 36.62	2.3097	21 48 24.0	9.277
20	4 8 55.29	2.3127	21 57 36.7	9.148
21	4 11 14.14	2.3157	22 6 41.7	9.017
22	4 13 33.17	2.3186	22 15 38.9	8.886
23	4 15 52.37	2.3215	N.22 24 28.2	8.755
	MONDAY 26.			
0	4 18 11.75	2.3243	N.22 33 9.5	8.623
1	4 20 31.29	2.3271	22 41 42.9	8.490
2	4 22 51.00	2.3298	22 50 8.3	8.356
3	4 25 10.87	2.3325	22 58 25.6	8.220
4	4 27 30.90	2.3352	23 6 34.8	8.085
5	4 29 51.09	2.3378	23 14 35.8	7.948
6	4 32 11.44	2.3403	23 22 28.6	7.811
7	4 34 31.94	2.3428	23 30 13.2	7.673
8	4 36 52.58	2.3451	23 37 49.4	7.534
9	4 39 13.36	2.3471	23 45 17.3	7.395
10	4 41 34.27	2.3496	23 52 36.8	7.254
11	4 43 55.31	2.3518	23 59 47.9	7.113
12	4 46 16.49	2.3540	24 6 50.5	6.972
13	4 48 37.79	2.3561	24 13 44.6	6.831
14	4 50 59.22	2.3581	24 20 30.1	6.689
15	4 53 20.77	2.3601	24 27 7.1	6.545
16	4 55 42.43	2.3620	24 33 35.5	6.400
17	4 58 4.20	2.3638	24 39 55.2	6.255
18	5 0 26.08	2.3654	24 46 6.2	6.110
19	5 2 48.05	2.3670	24 52 8.5	5.965
20	5 5 10.12	2.3685	24 58 2.1	5.820
21	5 7 32.28	2.3700	25 3 46.9	5.674
22	5 9 54.52	2.3714	25 9 23.0	5.528
23	5 12 16.85	2.3728	25 14 50.2	5.381
24	5 14 39.25	2.3740	N.25 20 8.6	5.233

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 27.			
	h m s	s	° ′ ″	″
0	5 14 39.25	2.3740	N.25 20 8.6	5.233
1	5 17 1.72	2.3751	25 25 18.2	5.085
2	5 19 24.26	2.3760	25 30 18.8	4.936
3	5 21 46.85	2.3769	25 35 10.5	4.787
4	5 24 9.49	2.3777	25 39 53.3	4.638
5	5 26 32.18	2.3785	25 44 27.2	4.489
6	5 28 54.91	2.3791	25 48 52.1	4.340
7	5 31 17.67	2.3797	25 53 8.1	4.190
8	5 33 40.47	2.3802	25 57 15.1	4.040
9	5 36 3.29	2.3806	26 1 13.0	3.890
10	5 38 26.14	2.3810	26 5 2.0	3.740
11	5 40 49.01	2.3813	26 8 41.9	3.590
12	5 43 11.89	2.3814	26 12 12.8	3.440
13	5 45 34.77	2.3813	26 15 34.7	3.290
14	5 47 57.64	2.3811	26 18 47.6	3.140
15	5 50 20.49	2.3808	26 21 51.4	2.989
16	5 52 43.33	2.3805	26 24 46.2	2.838
17	5 55 6.15	2.3801	26 27 32.0	2.687
18	5 57 28.94	2.3796	26 30 8.7	2.536
19	5 59 51.70	2.3790	26 32 36.3	2.386
20	6 2 14.42	2.3783	26 34 55.1	2.236
21	6 4 37.10	2.3775	26 37 4.7	2.085
22	6 6 59.72	2.3765	26 39 5.3	1.935
23	6 9 22.28	2.3755	N.26 40 56.9	1.786
	WEDNESDAY 28.			
0	6 11 44.78	2.3744	N.26 42 39.6	1.636
1	6 14 7.21	2.3732	26 44 13.3	1.486
2	6 16 29.56	2.3719	26 45 38.0	1.336
3	6 18 51.84	2.3705	26 46 53.6	1.187
4	6 21 14.03	2.3690	26 48 0.3	1.038
5	6 23 36.12	2.3673	26 48 58.1	0.889
6	6 25 58.11	2.3656	26 49 47.0	0.740
7	6 28 19.99	2.3638	26 50 27.0	0.592
8	6 30 41.77	2.3619	26 50 58.1	0.444
9	6 33 3.43	2.3599	26 51 20.3	0.296
10	6 35 24.97	2.3578	26 51 33.7	0.149
11	6 37 46.38	2.3556	26 51 38.3	+0.003
12	6 40 7.65	2.3533	26 51 34.1	−0.143
13	6 42 28.78	2.3509	26 51 21.1	0.289
14	6 44 49.77	2.3485	26 50 59.4	0.434
15	6 47 10.61	2.3459	26 50 29.0	0.579
16	6 49 31.29	2.3433	26 49 49.9	0.724
17	6 51 51.81	2.3405	26 49 2.2	0.868
18	6 54 12.17	2.3377	26 48 5.8	1.012
19	6 56 32.35	2.3348	26 47 0.9	1.154
20	6 58 52.35	2.3319	26 45 47.4	1.296
21	7 1 12.18	2.3288	26 44 25.4	1.438
22	7 3 31.82	2.3257	26 42 54.9	1.579
23	7 5 51.26	2.3224	26 41 16.0	1.720
24	7 8 10.51	2.3191	N.26 39 28.6	1.860

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 8 10.51	2.3191	N.26 39 28.6	1.860
1	7 10 29.56	2.3156	26 37 32.8	1.999
2	7 12 48.40	2.3121	26 35 28.7	2.137
3	7 15 7.02	2.3085	26 33 16.4	2.274
4	7 17 25.43	2.3049	26 30 55.8	2.411
5	7 19 43.62	2.3013	26 28 27.0	2.548
6	7 22 1.60	2.2976	26 25 50.0	2.684
7	7 24 19.35	2.2937	26 23 4.9	2.819
8	7 26 36.86	2.2898	26 20 11.7	2.953
9	7 28 54.13	2.2858	26 17 10.5	3.087
10	7 31 11.16	2.2818	26 14 1.3	3.220
11	7 33 27.95	2.2778	26 10 44.1	3.352
12	7 35 44.50	2.2737	26 7 19.0	3.484
13	7 38 0.80	2.2695	26 3 46.0	3.615
14	7 40 16.84	2.2652	26 0 5.3	3.744
15	7 42 32.62	2.2608	25 56 16.8	3.872
16	7 44 48.14	2.2564	25 52 20.6	4.000
17	7 47 3.39	2.2520	25 48 16.8	4.127
18	7 49 18.37	2.2475	25 44 5.3	4.254
19	7 51 33.09	2.2430	25 39 46.3	4.379
20	7 53 47.53	2.2384	25 35 19.8	4.504
21	7 56 1.70	2.2338	25 30 45.8	4.628
22	7 58 15.59	2.2291	25 26 4.4	4.751
23	8 0 29.20	2.2244	N.25 21 15.7	4.873

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 2 42.52	2.2197	N.25 16 19.7	4.995
1	8 4 55.56	2.2149	25 11 16.4	5.115
2	8 7 8.31	2.2101	25 6 6.0	5.234
3	8 9 20.77	2.2053	25 0 48.4	5.352
4	8 11 32.94	2.2004	24 55 23.7	5.470
5	8 13 44.82	2.1955	24 49 52.0	5.586
6	8 15 56.40	2.1906	24 44 13.3	5.702
7	8 18 7.69	2.1857	24 38 27.7	5.817
8	8 20 18.68	2.1807	24 32 35.3	5.931
9	8 22 29.36	2.1757	24 26 36.0	6.044
10	8 24 39.75	2.1707	24 20 30.0	6.156
11	8 26 49.84	2.1657	24 14 17.3	6.267
12	8 28 59.63	2.1607	24 7 57.9	6.378
13	8 31 9.12	2.1556	24 1 31.9	6.487
14	8 33 18.30	2.1505	23 54 59.4	6.595
15	8 35 27.17	2.1454	23 48 20.5	6.702
16	8 37 35.74	2.1403	23 41 35.2	6.808
17	8 39 44.01	2.1352	23 34 43.5	6.914
18	8 41 51.97	2.1301	23 27 45.4	7.019
19	8 43 59.62	2.1250	23 20 41.1	7.123
20	8 46 6.97	2.1199	23 13 30.6	7.226
21	8 48 14.01	2.1148	23 6 14.0	7.327
22	8 50 20.74	2.1097	22 58 51.3	7.428
23	8 52 27.17	2.1046	22 51 22.6	7.528
24	8 54 33.29	2.0995	N.22 43 47.9	7.628

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 54 33.29	2.0995	N.22 43 47.9	7.628
1	8 56 39.10	2.0944	22 36 7.3	7.726
2	8 58 44.61	2.0893	22 28 20.9	7.824
3	9 0 49.82	2.0842	22 20 28.6	7.920
4	9 2 54.72	2.0791	22 12 30.5	8.015
5	9 4 59.32	2.0740	22 4 26.8	8.109
6	9 7 3.61	2.0690	21 56 17.5	8.202
7	9 9 7.60	2.0640	21 48 2.6	8.295
8	9 11 11.29	2.0590	21 39 42.2	8.387
9	9 13 14.69	2.0540	21 31 16.2	8.478
10	9 15 17.79	2.0490	21 22 44.8	8.567
11	9 17 20.59	2.0441	21 14 8.1	8.655
12	9 19 23.08	2.0392	21 5 26.2	8.743
13	9 21 25.28	2.0343	20 56 39.0	8.830
14	9 23 27.19	2.0294	20 47 46.6	8.917
15	9 25 28.81	2.0246	20 38 48.9	9.003
16	9 27 30.14	2.0198	20 29 46.1	9.087
17	9 29 31.18	2.0150	20 20 38.4	9.170
18	9 31 31.94	2.0102	20 11 25.8	9.252
19	9 33 32.41	2.0054	20 2 8.2	9.334
20	9 35 32.60	2.0007	19 52 45.7	9.415
21	9 37 32.50	1.9961	19 43 18.3	9.495
22	9 39 32.12	1.9915	19 33 46.2	9.574
23	9 41 31.47	1.9869	N.19 24 9.4	9.653

SUNDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 43 30.56	1.9823	N.19 14 27.9	9.730

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	4	0	33.2
○ Full Moon, . . .	11	23	17.8
☾ Last Quarter, . .	18	23	0.4
● New Moon, . . .	25	21	20.5

	d	h
☾ Apogee, ...	5	5.5
☾ Perigee, ...	19	12.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	56° 13′ 15″	3183	57° 39′ 44″	3198	59° 5′ 55″	3212	60° 31′ 50″	3226
	Jupiter	E.	44 30 5	2871	42 57 9	2887	41 24 33	2901	39 52 16	2917
	Regulus	E.	50 49 52	2858	49 16 39	2873	47 43 46	2888	46 11 12	2902
	Spica	E.	104 52 37	2848	103 19 12	2862	101 46 5	2876	100 13 15	2888
	Mars	E.	118 30 50	2707	116 54 20	2721	115 18 8	2734	113 42 13	2746
2	Sun	W.	67 37 23	3291	69 1 45	3303	70 25 53	3314	71 49 48	3325
	Jupiter	E.	32 15 37	2991	30 45 13	3006	29 15 8	3022	27 45 22	3038
	Regulus	E.	38 32 54	2973	37 2 8	2987	35 31 39	3001	34 1 28	3015
	Spica	E.	92 33 2	2948	91 1 44	2959	89 30 40	2969	87 59 49	2979
	Mars	E.	105 46 40	2805	104 12 19	2816	102 38 12	2827	101 4 19	2836
3	Sun	W.	78 46 25	3373	80 9 12	3381	81 31 50	3389	82 54 19	3395
	Spica	E.	80 28 33	3025	78 58 51	3032	77 29 18	3039	75 59 54	3047
	Mars	E.	93 17 53	2880	91 45 9	2887	90 12 34	2894	88 40 8	2901
4	Sun	W.	89 44 56	3424	91 6 45	3428	92 28 30	3431	93 50 11	3435
	Pollux	W.	22 16 4	3078	23 44 41	3079	25 13 16	3080	26 41 50	3081
	Spica	E.	68 34 51	3073	67 6 9	3078	65 37 32	3081	64 8 59	3085
	Mars	E.	80 59 54	2927	79 28 10	2931	77 56 30	2935	76 24 55	2938
	Antares	E.	114 27 32	3065	112 58 39	3068	111 29 50	3071	110 1 5	3073
5	Sun	W.	100 37 56	3441	101 59 26	3441	103 20 56	3440	104 42 27	3439
	Pollux	W.	34 4 27	3082	35 32 58	3082	37 1 30	3080	38 30 4	3078
	Spica	E.	56 47 10	3095	55 18 54	3096	53 50 39	3096	52 22 24	3096
	Mars	E.	68 47 43	2945	67 16 21	2946	65 45 0	2945	64 13 38	2944
	Antares	E.	102 37 55	3079	101 9 20	3079	99 40 45	3079	98 12 10	3078
6	Sun	W.	111 30 32	3426	112 52 19	3422	114 14 11	3417	115 36 8	3412
	Pollux	W.	45 53 33	3065	47 22 26	3060	48 51 24	3056	50 20 28	3051
	Spica	E.	45 0 59	3090	43 32 37	3088	42 4 13	3086	40 35 46	3083
	Mars	E.	56 36 22	2934	55 4 46	2930	53 33 5	2937	52 1 20	2923
	Antares	E.	90 48 41	3065	89 19 49	3061	87 50 52	3057	86 21 50	3053
7	Sun	W.	122 27 31	3380	123 50 10	3372	125 12 58	3365	126 35 55	3356
	Pollux	W.	57 47 27	3021	59 17 14	3014	60 47 10	3006	62 17 15	2999
	Jupiter	W.	27 40 7	3090	29 8 29	3078	30 37 5	3067	32 5 55	3056
	Regulus	W.	21 52 27	3121	23 20 11	3103	24 48 17	3086	26 16 44	3069
	Spica	E.	33 12 45	3070	31 43 59	3069	30 15 11	3067	28 46 21	3065
	Mars	E.	44 21 6	2897	42 48 43	2890	41 16 11	2883	39 43 30	2876
	Antares	E.	78 55 6	3023	77 25 22	3017	75 55 30	3009	74 25 29	3002
8	Pollux	W.	69 50 13	2954	71 21 23	2946	72 52 44	2935	74 24 18	2926
	Jupiter	W.	39 33 28	3001	41 3 39	2990	42 34 4	2980	44 4 42	2968
	Regulus	W.	33 43 38	2999	35 13 52	2986	36 44 22	2973	38 15 8	2961
	Mars	E.	31 57 46	2838	30 24 7	2829	28 50 17	2821	27 16 16	2811
	Antares	E.	66 52 56	2960	65 21 53	2950	63 50 38	2941	62 19 11	2931
	Saturn	E.	121 1 27	2973	119 30 40	2963	117 59 41	2953	116 28 29	2942
9	Pollux	W.	82 5 22	2873	83 38 16	2861	85 11 25	2850	86 44 48	2838
	Jupiter	W.	51 41 30	2911	53 13 35	2898	54 45 56	2887	56 18 32	2875
	Regulus	W.	45 52 56	2898	47 25 18	2886	48 57 55	2873	50 30 48	2860
	Antares	E.	54 38 47	2880	53 6 2	2869	51 33 4	2859	49 59 52	2848
	α Aquilæ	E.	102 15 21	3730	100 59 6	3710	99 42 30	3692	98 25 34	3673
	Saturn	E.	108 49 5	2887	107 16 29	2876	105 43 39	2864	104 10 34	2852

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Sun**	W.	61° 57′ 28″	3240	63° 22′ 50″	3253	64° 47′ 56″	3266	66° 12′ 47″	3279
	Jupiter	E.	38 20 19	2932	36 48 41	2946	35 17 21	2962	33 46 20	2976
	Regulus	E.	44 38 56	2916	43 6 58	2931	41 35 19	2946	40 3 58	2959
	Spica	E.	98 40 41	2901	97 8 23	2913	95 36 21	2925	94 4 34	2937
	Mars	E.	112 6 34	2759	110 31 12	2771	108 56 6	2782	107 21 15	2795
2	**Sun**	W.	73 13 31	3336	74 37 1	3345	76 0 20	3355	77 23 28	3365
	Jupiter	E.	26 15 56	3054	24 46 50	3071	23 18 5	3089	21 49 42	3107
	Regulus	E.	32 31 34	3030	31 1 58	3044	29 32 40	3059	28 3 39	3073
	Spica	E.	86 29 10	2989	84 58 44	2998	83 28 29	3008	81 58 26	3016
	Mars	E.	99 30 38	2845	97 57 9	2855	96 23 52	2864	94 50 47	2873
3	**Sun**	W.	84 16 41	3403	85 38 54	3409	87 1 0	3414	88 23 1	3419
	Spica	E.	74 30 39	3053	73 1 32	3059	71 32 32	3064	70 3 38	3069
	Mars	E.	87 7 51	2908	85 35 42	2913	84 3 40	2918	82 31 44	2923
4	**Sun**	W.	95 11 48	3437	96 33 23	3439	97 54 55	3440	99 16 26	3441
	Pollux	W.	28 10 23	3082	29 38 55	3082	31 7 26	3082	32 35 57	3083
	Spica	E.	62 40 31	3088	61 12 7	3091	59 43 46	3092	58 15 27	3094
	Mars	E.	74 53 24	2940	73 21 56	2942	71 50 30	2943	70 19 6	2944
	Antares	E.	108 32 23	3076	107 3 44	3077	105 35 6	3078	104 6 30	3079
5	**Sun**	W.	106 3 59	3438	107 25 33	3436	108 47 9	3432	110 8 49	3430
	Pollux	W.	39 58 40	3076	41 27 19	3074	42 56 0	3072	44 24 44	3068
	Spica	E.	50 54 9	3096	49 25 54	3094	47 57 37	3093	46 29 19	3091
	Mars	E.	62 42 15	2942	61 10 50	2941	59 39 23	2939	58 7 54	2937
	Antares	E.	96 43 33	3076	95 14 54	3074	93 46 13	3072	92 17 29	3069
6	**Sun**	W.	116 58 11	3407	118 20 20	3400	119 42 36	3393	121 5 0	3387
	Pollux	W.	51 49 38	3045	53 18 55	3040	54 48 18	3034	56 17 48	3027
	Spica	E.	39 7 16	3081	37 38 43	3078	36 10 7	3076	34 41 28	3073
	Mars	E.	50 29 30	2918	48 57 34	2912	47 25 31	2908	45 53 22	2902
	Antares	E.	84 52 43	3048	83 23 30	3042	81 54 9	3036	80 24 41	3030
7	**Sun**	W.	127 59 2	3347	129 22 19	3338	130 45 46	3329	132 9 24	3319
	Pollux	W.	63 47 29	2990	65 17 54	2982	66 48 29	2973	68 19 15	2964
	Jupiter	W.	33 34 59	3045	35 4 16	3034	36 33 47	3023	38 3 31	3013
	Regulus	W.	27 45 31	3054	29 14 37	3040	30 44 0	3026	32 13 41	3013
	Spica	E.	27 17 29	3065	25 48 36	3066	24 19 45	3068	22 50 56	3073
	Mars	E.	38 10 40	2869	36 37 41	2862	35 4 33	2854	33 31 15	2845
	Antares	E.	72 55 19	2994	71 24 59	2986	69 51 29	2977	68 23 48	2969
8	**Pollux**	W.	75 56 4	2916	77 28 3	2905	79 0 16	2894	80 32 42	2883
	Jupiter	W.	45 35 35	2957	47 6 42	2945	48 38 4	2934	50 9 40	2923
	Regulus	W.	39 46 10	2948	41 17 28	2935	42 49 2	2924	44 20 51	2911
	Mars	E.	25 42 3	2802	24 7 38	2794	22 33 2	2786	20 58 16	2779
	Antares	E.	60 47 32	2921	59 15 40	2912	57 43 36	2901	56 11 18	2891
	Saturn	E.	114 57 4	2931	113 25 25	2921	111 53 33	2909	110 21 26	2898
9	**Pollux**	W.	88 18 26	2827	89 52 19	2815	91 26 27	2804	93 0 50	2792
	Jupiter	W.	57 51 23	2863	59 24 29	2851	60 57 51	2838	62 31 29	2825
	Regulus	W.	52 3 58	2848	53 37 24	2835	55 11 6	2822	55 45 5	2810
	Antares	E.	48 26 26	2837	46 52 46	2826	45 18 52	2815	43 44 43	2804
	α Aquilæ	E.	97 8 18	3656	95 50 44	3639	94 32 52	3624	93 14 44	3619
	Saturn	E.	102 37 13	2840	101 3 37	2828	99 29 46	2317	97 55 40	2805

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Jupiter	W.	64° 5′ 23″	2815	65° 39′ 32″	2802	67° 13′ 57″	2790	68° 48′ 38″	2778
	Regulus	W.	58 19 20	2798	59 53 51	2785	61 28 39	2772	63 3 43	2760
	Antares	E.	42 10 20	2793	40 35 43	2782	39 0 52	2772	37 25 47	2760
	α Aquilæ	E.	91 56 20	3596	90 37 42	3584	89 18 50	3573	87 59 46	3563
	Saturn	E.	96 21 18	2792	94 46 40	2780	93 11 46	2760	91 36 37	2756
11	Jupiter	W.	76 46 3	2717	78 22 20	2705	79 58 53	2694	81 35 41	2682
	Regulus	W.	71 3 11	2698	72 39 53	2686	74 16 52	2674	75 54 7	2663
	Spica	W.	17 23 4	2845	18 56 33	2810	20 30 48	2779	22 5 44	2751
	Antares	E.	29 26 56	2712	27 50 32	2704	26 13 57	2696	24 37 12	2690
	α Aquilæ	E.	81 21 58	3527	80 2 4	3524	78 42 6	3522	77 22 6	3522
	Saturn	E.	83 36 52	2696	82 0 7	2685	80 23 7	2673	78 45 51	2662
12	Jupiter	W.	89 43 34	2626	91 21 54	2615	93 0 29	2604	94 39 18	2594
	Regulus	W.	84 4 16	2605	85 43 4	2594	87 22 7	2584	89 1 24	2573
	Spica	W.	30 8 20	2649	31 46 9	2633	33 24 19	2618	35 2 50	2603
	Mars	W.	20 3 13	2502	21 44 23	2490	23 25 50	2478	25 7 34	2467
	Saturn	E.	70 35 43	2607	68 56 57	2596	67 17 56	2585	65 38 41	2575
	α Aquilæ	E.	70 42 36	3545	69 23 1	3555	68 3 38	3567	66 44 28	3582
	Fomalhaut	E.	99 19 38	2763	97 44 22	2751	96 8 50	2739	94 33 2	2728
13	Spica	W.	43 20 5	2540	45 0 23	2529	46 40 56	2517	48 21 45	2507
	Mars	W.	33 39 56	2417	35 23 6	2408	37 6 30	2399	38 50 6	2390
	Saturn	E.	57 19 3	2529	55 38 30	2520	53 57 44	2511	52 16 46	2503
	α Aquilæ	E.	60 13 40	3700	58 56 53	3735	57 40 43	3773	56 25 13	3816
	Fomalhaut	E.	86 30 29	2678	84 53 20	2669	83 15 59	2661	81 38 27	2654
	α Pegasi	E.	105 42 17	2934	104 10 41	2018	102 38 45	2903	101 6 30	2889
14	Spica	W.	56 49 17	2460	58 31 26	2452	60 13 47	2444	61 56 19	2436
	Mars	W.	47 31 8	2350	49 15 54	2343	51 0 51	2336	52 45 58	2330
	Saturn	E.	43 49 21	2470	42 7 25	2463	40 25 20	2458	38 43 8	2454
	α Aquilæ	E.	50 20 37	4121	49 10 56	4206	48 2 36	4300	46 55 43	4405
	Fomalhaut	E.	73 28 32	2625	71 50 11	2621	70 11 45	2618	68 33 14	2615
	α Pegasi	E.	93 21 16	2835	91 47 33	2826	90 13 39	2818	88 39 35	2812
15	Spica	W.	70 31 41	2401	72 15 15	2395	73 58 57	2389	75 42 48	2382
	Mars	W.	61 33 53	2299	63 19 54	2294	65 6 3	2288	66 52 20	2283
	Antares	W.	24 39 30	2422	26 22 34	2412	28 5 52	2403	29 49 23	2394
	Fomalhaut	E.	60 20 9	2615	58 41 34	2618	57 3 3	2621	55 24 37	2626
	α Pegasi	E.	80 47 30	2792	79 12 52	2791	77 38 12	2791	76 3 32	2792
	Sun	E.	141 52 6	2694	140 15 18	2688	138 38 22	2682	137 1 18	2677
16	Spica	W.	84 24 0	2358	86 8 35	2353	87 53 17	2350	89 38 4	2346
	Mars	W.	75 45 28	2263	77 32 24	2258	79 19 26	2254	81 6 33	2251
	Antares	W.	38 29 45	2350	40 14 18	2355	41 58 58	2350	43 43 45	2344
	Fomalhaut	E.	47 14 54	2677	45 37 43	2693	44 0 54	2712	42 24 30	2735
	α Pegasi	E.	68 10 59	2814	66 36 49	2822	65 2 50	2832	63 29 4	2843
	Sun	E.	128 54 9	2651	127 16 23	2646	125 38 30	2642	124 0 32	2638
17	Spica	W.	98 23 20	2329	100 8 37	2326	101 53 58	2324	103 39 23	2322
	Mars	W.	90 3 18	2237	91 50 51	2234	93 38 28	2232	95 26 8	2229
	Antares	W.	52 29 21	2324	54 14 45	2321	56 0 14	2318	57 45 47	2315
	Fomalhaut	E.	34 31 47	2917	32 59 50	2974	31 29 5	3043	29 59 45	3123
	α Pegasi	E.	55 44 45	2931	54 13 6	2958	52 42 0	2986	51 11 30	3018
	Sun	E.	115 49 19	2619	114 10 50	2615	112 32 16	2613	110 53 39	2610

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Jupiter	W.	70° 23′ 35″	2766	71° 58′ 48″	2753	73° 34′ 17″	2741	75° 10′ 2″	2729
	Regulus	W.	64 39 4	2747	66 14 41	2735	67 50 35	2722	69 26 45	2710
	Antares	E.	35 50 27	2750	34 14 54	2740	32 39 7	2731	31 3 8	2721
	α Aquilæ	E.	86 40 31	3553	85 21 5	3545	84 1 30	3537	82 41 47	3532
	Saturn	E.	90 1 12	2744	88 25 31	2732	86 49 34	2720	85 13 21	2708
11	Jupiter	W.	83 12 45	2671	84 50 4	2659	86 27 39	2648	88 5 29	2637
	Regulus	W.	77 31 37	2651	79 9 23	2638	80 47 26	2627	82 25 44	2617
	Spica	W.	23 41 16	2727	25 17 20	2704	26 53 54	2684	28 30 55	2666
	Antares	E.	23 0 19	2685	21 23 19	2681	19 46 14	2680	18 9 7	2683
	α Aquilæ	E.	76 2 6	3523	74 42 7	3525	73 22 11	3530	72 2 20	3536
	Saturn	E.	77 8 20	2650	75 30 33	2639	73 52 31	2628	72 14 14	2618
12	Jupiter	W.	96 18 21	2584	97 57 38	2574	99 37 9	2564	101 16 54	2554
	Regulus	W.	90 40 56	2563	92 20 42	2553	94 0 42	2543	95 40 56	2533
	Spica	W.	36 41 41	2590	38 20 50	2576	40 0 18	2564	41 40 3	2551
	Mars	W.	26 49 33	2457	28 31 47	2446	30 14 16	2436	31 56 59	2426
	Saturn	E.	63 59 12	2565	62 19 29	2556	60 39 33	2546	58 59 24	2538
	α Aquilæ	E.	65 25 34	3599	64 6 59	3620	62 48 46	3644	61 30 59	3670
	Fomalhaut	E.	92 56 59	2717	91 20 42	2707	89 44 11	2696	88 7 26	2687
13	Spica	W.	50 2 48	2497	51 44 5	2487	53 25 36	2478	55 7 20	2469
	Mars	W.	40 33 55	2382	42 17 56	2373	44 2 9	2366	45 46 33	2358
	Saturn	E.	50 35 37	2496	48 54 18	2488	47 12 48	2482	45 31 9	2475
	α Aquilæ	E.	55 10 27	3864	53 56 31	3919	52 43 31	3979	51 31 31	4046
	Fomalhaut	E.	80 0 45	2647	78 22 54	2640	76 44 54	2635	75 6 47	2629
	α Pegasi	E.	99 33 57	2877	98 1 9	2865	96 28 5	2854	94 54 47	2844
14	Spica	W.	63 39 3	2429	65 21 57	2421	67 5 2	2414	68 48 17	2408
	Mars	W.	54 31 14	2323	56 16 40	2316	58 2 16	2311	59 48 0	2304
	Saturn	E.	37 0 50	2450	35 18 27	2447	33 35 59	2445	31 53 28	2443
	α Aquilæ	E.	45 50 26	4522	44 46 53	4652	43 45 13	4799	42 45 36	4965
	Fomalhaut	E.	66 54 40	2613	65 16 3	2612	63 37 25	2612	61 58 46	2613
	α Pegasi	E.	87 5 23	2806	85 31 3	2801	83 56 37	2797	82 22 5	2795
15	Spica	W.	77 26 48	2378	79 10 55	2372	80 55 10	2367	82 39 32	2363
	Mars	W.	68 38 44	2279	70 25 15	2274	72 11 53	2270	73 58 37	2265
	Antares	W.	31 33 7	2386	33 17 2	2379	35 1 7	2373	36 45 21	2366
	Fomalhaut	E.	53 46 18	2633	52 8 8	2641	50 30 9	2651	48 52 23	2663
	α Pegasi	E.	74 28 53	2794	72 54 17	2797	71 19 45	2801	69 45 18	2807
	Sun	E.	135 24 7	2671	133 46 48	2666	132 9 22	2660	130 31 49	2655
16	Spica	W.	91 22 57	2342	93 7 55	2338	94 52 59	2335	96 38 7	2332
	Mars	W.	82 53 45	2247	84 41 2	2245	86 28 23	2242	88 15 48	2239
	Antares	W.	45 28 40	2340	47 13 41	2335	48 58 49	2332	50 44 2	2328
	Fomalhaut	E.	40 48 37	2761	39 13 18	2792	37 38 39	2827	36 4 46	2869
	α Pegasi	E.	61 55 32	2857	60 22 18	2873	58 49 24	2890	57 16 52	2909
	Sun	E.	122 22 28	2634	120 44 19	2629	119 6 4	2626	117 27 44	2622
17	Spica	W.	105 24 51	2320	107 10 22	2317	108 55 56	2315	110 41 33	2314
	Mars	W.	97 13 52	2228	99 1 38	2226	100 49 27	2225	102 37 18	2223
	Antares	W.	59 31 25	2312	61 17 7	2310	63 2 52	2307	64 48 41	2304
	Fomalhaut	E.	28 32 3	3220	27 6 17	3336	25 42 47	3477	24 21 57	3650
	α Pegasi	E.	49 41 39	3054	48 12 33	3095	46 44 17	3140	45 16 56	3191
	Sun	E.	109 14 58	2608	107 36 14	2605	105 57 26	2603	104 18 35	2601

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
18	Mars	W.	104 25 11	2222	106 13 6	2220	108 1 3	2220	109 49 1	2218
	Antares	W.	66 34 34	2302	68 20 30	2301	70 6 28	2299	71 52 29	2298
	α Pegasi	E.	43 50 36	3249	42 25 25	3315	41 1 31	3389	39 39 2	3474
	Sun	E.	102 39 41	2599	101 0 44	2597	99 21 45	2596	97 42 44	2593
19	Antares	W.	80 43 5	2291	82 29 17	2291	84 15 30	2291	86 1 43	2290
	α Aquilæ	W.	44 26 14	4439	45 31 0	4306	46 37 47	4187	47 46 25	4080
	Saturn	W.	26 49 1	2348	28 33 50	2342	30 18 49	2335	32 3 57	2329
	Sun	E.	89 27 9	2588	87 47 58	2588	86 8 46	2587	84 29 33	2586
20	Antares	W.	94 52 54	2291	96 39 7	2291	98 25 20	2291	100 11 32	2293
	α Aquilæ	W.	53 52 54	3678	55 10 4	3619	56 28 18	3565	57 47 30	3516
	Saturn	W.	40 51 20	2312	42 37 2	2311	44 22 46	2309	46 8 32	2309
	Sun	E.	76 13 24	2587	74 34 11	2588	72 54 59	2588	71 15 48	2590
21	α Aquilæ	W.	64 35 32	3333	65 59 5	3306	67 23 9	3283	68 47 40	3262
	Saturn	W.	54 57 30	2309	56 43 16	2310	58 29 1	2311	60 14 44	2313
	Fomalhaut	W.	29 49 43	3035	31 19 12	2965	32 50 8	2906	34 22 19	2855
	Sun	E.	63 0 18	2597	61 21 19	2599	59 42 22	2601	58 3 28	2604
22	α Aquilæ	W.	75 55 36	3190	77 21 57	3181	78 48 29	3174	80 15 9	3170
	Saturn	W.	69 2 36	2325	70 47 59	2328	72 33 17	2332	74 18 30	2335
	Fomalhaut	W.	42 16 44	2694	43 53 32	2675	45 30 46	2657	47 8 23	2642
	α Pegasi	W.	30 12 33	4512	31 16 14	4297	32 23 9	4112	33 32 59	3954
	Sun	E.	49 49 58	2620	48 11 30	2624	46 33 7	2628	44 54 50	2633
23	α Aquilæ	W.	87 29 14	3170	88 55 59	3174	90 22 39	3181	91 49 11	3188
	Saturn	W.	83 3 6	2359	84 47 40	2364	86 32 6	2371	88 16 23	2376
	Fomalhaut	W.	55 20 30	2599	56 59 26	2596	58 38 27	2593	60 17 32	2591
	α Pegasi	W.	39 55 43	3432	41 17 23	3365	42 40 20	3306	44 4 25	3254
	Sun	E.	36 45 7	2659	35 7 32	2666	33 30 6	2672	31 52 49	2679
28	Sun	W.	25 39 36	3098	27 7 48	3111	28 35 44	3125	30 3 23	3138
	Jupiter	E.	51 17 18	2815	49 43 9	2828	48 9 18	2842	46 35 44	2855
	Regulus	E.	55 28 17	2779	53 53 21	2792	52 18 43	2805	50 44 22	2819
	Spica	E.	109 31 33	2772	107 56 29	2785	106 21 42	2798	104 47 11	2809
	Mars	E.	115 47 33	2719	114 11 19	2732	112 35 22	2745	110 59 42	2758
29	Sun	W.	37 17 45	3203	38 43 51	3214	40 9 43	3227	41 35 20	3239
	Jupiter	E.	38 52 22	2925	37 20 35	2939	35 49 6	2954	34 17 55	2968
	Regulus	E.	42 57 2	2887	41 24 27	2901	39 52 9	2915	38 20 9	2929
	Spica	E.	96 58 29	2869	95 25 31	2880	93 52 47	2892	92 20 18	2903
	Mars	E.	103 5 32	2821	101 31 31	2833	99 57 46	2845	98 24 16	2856
30	Sun	W.	48 39 57	3296	50 4 13	3306	51 28 17	3317	52 52 9	3327
	Regulus	E.	30 44 38	3001	29 14 27	3018	27 44 36	3034	26 15 6	3052
	Spica	E.	84 41 21	2956	83 10 13	2966	81 39 18	2976	80 8 35	2985
	Mars	E.	90 40 26	2912	89 8 22	2922	87 36 31	2932	86 4 53	2942
31	Sun	W.	59 48 45	3371	61 11 35	3379	62 34 16	3386	63 56 49	3393
	Pollux	W.	18 13 50	3041	19 43 12	3044	21 12 30	3047	22 41 45	3051
	Spica	E.	72 37 44	3026	71 8 4	3034	69 38 33	3041	68 9 11	3047
	Mars	E.	78 29 39	2985	76 59 8	2993	75 28 47	3001	73 58 35	3098
	Antares	E.	118 31 2	3018	117 1 12	3026	115 31 31	3031	114 1 57	3038

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Mars	W.	111° 37′ 1″	2218	113° 25′ 2″	2218	115° 13′ 3″	2217	117° 1′ 5″	2216
	Antares	W.	73 38 32	2296	75 24 37	2294	77 10 45	2294	78 56 54	2292
	α Pegasi	E.	38 18 9	3570	36 59 2	3681	35 41 55	3808	34 27 1	3954
	Sun	E.	96 3 40	2593	94 24 35	2591	92 45 28	2590	91 6 19	2589
19	Antares	W.	87 47 57	2290	89 34 11	2289	91 20 26	2290	93 6 40	2290
	α Aquilæ	W.	48 56 46	3983	50 8 42	3895	51 22 7	3816	52 36 53	3744
	Saturn	W.	33 49 14	2324	35 34 38	2321	37 20 7	2317	39 5 41	2314
	Sun	E.	82 50 19	2586	81 11 5	2586	79 31 51	2586	77 52 37	2587
20	Antares	W.	101 57 42	2294	103 43 51	2295	105 29 58	2297	107 16 2	2298
	α Aquilæ	W.	59 7 36	3472	60 28 31	3432	61 50 11	3395	63 12 33	3363
	Saturn	W.	47 54 19	2308	49 40 7	2308	51 25 55	2308	53 11 43	2309
	Sun	E.	69 36 39	2591	67 57 31	2591	66 18 24	2593	64 39 20	2595
21	α Aquilæ	W.	70 12 36	3243	71 37 54	3226	73 3 32	3212	74 29 27	3200
	Saturn	W.	62 0 25	2315	63 46 3	2317	65 31 38	2320	67 17 9	2322
	Fomalhaut	W.	35 55 35	2812	37 29 47	2776	39 4 46	2744	40 40 27	2717
	Sun	E.	56 24 38	2606	54 45 51	2610	53 7 9	2612	51 28 31	2616
22	α Aquilæ	W.	81 41 54	3167	83 8 43	3165	84 35 34	3165	86 2 25	3167
	Saturn	W.	76 3 38	2339	77 48 40	2344	79 33 35	2348	81 18 24	2353
	Fomalhaut	W.	48 46 21	2630	50 24 35	2621	52 3 2	2612	53 41 41	2604
	α Pegasi	W.	34 45 24	3819	36 0 7	3700	37 16 54	3598	38 35 30	3510
	Sun	E.	43 16 40	2638	41 38 36	2643	40 0 39	2648	38 22 49	2654
23	α Aquilæ	W.	93 15 34	3198	94 41 46	3209	96 7 45	3221	97 33 29	3236
	Saturn	W.	90 0 32	2382	91 44 32	2389	93 28 22	2396	95 12 2	2404
	Fomalhaut	W.	61 56 39	2591	63 35 47	2591	65 14 54	2593	66 53 59	2594
	α Pegasi	W.	45 29 30	3209	46 55 29	3169	48 22 15	3134	49 49 43	3105
	Sun	E.	30 15 41	2687	28 38 43	2694	27 1 55	2701	25 25 17	2710
28	Sun	W.	31 30 47	3151	32 57 55	3164	34 24 47	3177	35 51 24	3190
	Jupiter	E.	45 2 28	2869	43 29 30	2883	41 56 50	2897	40 24 27	2911
	Regulus	E.	49 10 19	2832	47 36 33	2846	46 3 5	2860	44 29 55	2873
	Spica	E.	103 12 55	2821	101 38 55	2834	100 5 11	2845	98 31 42	2858
	Mars	E.	109 24 19	2771	107 49 13	2783	106 14 23	2795	104 39 49	2808
29	Sun	W.	43 0 43	3251	44 25 52	3263	45 50 47	3275	47 15 28	3285
	Jupiter	E.	32 47 2	2982	31 16 27	2997	29 46 11	3013	28 16 14	3028
	Regulus	E.	36 48 27	2943	35 17 3	2957	33 45 56	2972	32 15 8	2986
	Spica	E.	90 48 3	2914	89 16 2	2925	87 44 15	2935	86 12 41	2946
	Mars	E.	96 51 1	2867	95 18 0	2879	93 45 14	2891	92 12 43	2901
30	Sun	W.	54 15 49	3337	55 39 18	3345	57 2 37	3354	58 25 46	3363
	Regulus	E.	24 45 58	3071	23 17 13	3091	21 48 53	3114	20 21 1	3139
	Spica	E.	78 38 3	2994	77 7 43	3002	75 37 33	3011	74 7 34	3018
	Mars	E.	84 33 28	2952	83 2 15	2961	81 31 13	2969	80 0 21	2977
31	Sun	W.	65 19 14	3399	66 41 32	3404	68 3 44	3410	69 25 49	3415
	Pollux	W.	24 10 55	3054	25 40 1	3057	27 9 3	3060	28 38 1	3064
	Spica	E.	66 39 57	3053	65 10 50	3060	63 41 51	3065	62 12 58	3070
	Mars	E.	72 28 32	3014	70 58 37	3020	69 28 49	3026	67 59 8	3031
	Antares	E.	112 32 31	3043	111 3 12	3048	109 33 59	3053	108 4 52	3058

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	4 37 41.27	10.236	N.22 6 31.9	20.09	15 48.24	68.43	2 27.27	0.379
Mon.	2	4 41 47.11	10.251	22 14 22.7	19.12	15 48.11	68.49	2 18.01	0.394
Tues.	3	4 45 53.33	10.266	22 21 50.2	18.15	15 47.99	68.54	2 8.38	0.409
Wed.	4	4 49 59.90	10.280	22 28 54.1	17.17	15 47.87	68.59	1 58.40	0.423
Thur.	5	4 54 6.77	10.293	22 35 34.5	16.18	15 47.76	68.63	1 48.11	0.436
Frid.	6	4 58 13.96	10.306	22 41 51.2	15.19	15 47.65	68.67	1 37.49	0.449
Sat.	7	5 2 21.45	10.318	22 47 44.0	14.19	15 47.54	68.71	1 26.59	0.461
Sun.	8	5 6 29.23	10.329	22 53 12.8	13.18	15 47.44	68.75	1 15.41	0.472
Mon.	9	5 10 37.26	10.339	22 58 17.5	12.17	15 47.34	68.79	1 3.97	0.482
Tues.	10	5 14 45.52	10.349	23 2 58.0	11.16	15 47.24	68.82	0 52.30	0.492
Wed.	11	5 18 54.01	10.358	23 7 14.1	10.15	15 47.15	68.85	0 40.40	0.501
Thur.	12	5 23 2.72	10.366	23 11 5.9	9.14	15 47.06	68.88	0 28.28	0.509
Frid.	13	5 27 11.62	10.374	23 14 33.3	8.12	15 46.97	68.91	0 15.97	0.517
Sat.	14	5 31 20.68	10.380	23 17 36.2	7.10	15 46.88	68.93	0 3.50	0.523
Sun.	15	5 35 29.89	10.386	23 20 14.5	6.08	15 46.80	68.94	0 9.11	0.529
Mon.	16	5 39 39.23	10.390	23 22 28.1	5.05	15 46.72	68.96	0 21.85	0.533
Tues.	17	5 43 48.68	10.394	23 24 17.1	4.02	15 46.65	68.97	0 34.72	0.537
Wed.	18	5 47 58.22	10.398	23 25 41.3	2.99	15 46.58	68.97	0 47.66	0.541
Thur.	19	5 52 7.82	10.400	23 26 40.7	1.96	15 46.51	68.97	1 0.68	0.543
Frid.	20	5 56 17.47	10.401	23 27 15.3	+ 0.93	15 46.45	68.97	1 13.73	0.544
Sat.	21	6 0 27.12	10.401	23 27 25.2	− 0.10	15 46.39	68.97	1 26.78	0.544
Sun.	22	6 4 36.77	10.399	23 27 10.4	1.14	15 46.34	68.96	1 39.84	0.542
Mon.	23	6 8 46.38	10.397	23 26 30.6	2.18	15 46.29	68.95	1 52.85	0.540
Tues.	24	6 12 55.90	10.394	23 25 26.0	3.21	15 46.25	68.94	2 5.77	0.537
Wed.	25	6 17 5.33	10.390	23 23 56.6	4.24	15 46.22	68.93	2 18.61	0.533
Thur.	26	6 21 14.63	10.385	23 22 2.4	5.27	15 46.20	68.91	2 31.32	0.528
Frid.	27	6 25 23.78	10.378	23 19 43.5	6.29	15 46.18	68.89	2 43.88	0.521
Sat.	28	6 29 32.77	10.369	23 17 0.1	7.31	15 46.16	68.87	2 56.27	0.512
Sun.	29	6 33 41.55	10.360	23 13 52.2	8.33	15 46.15	68.84	3 8.46	0.503
Mon.	30	6 37 50.09	10.350	23 10 19.8	9.35	15 46.15	68.81	3 20.41	0.493
Tues.	31	6 41 58.38	10.340	N.23 6 23.0	10.36	15 46.14	68.78	3 32.11	0.483

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, to be added to / subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	4 37 41.69	10.235	N.22 6 32.7	20.09	2 27.25	0.379	4 40 8.94
Mon.	2	4 41 47.51	10.250	22 14 23.4	19.12	2 17.99	0.394	4 44 5.50
Tues.	3	4 45 53.70	10.265	22 21 50.8	18.15	2 8.36	0.409	4 48 2.06
Wed.	4	4 50 0.24	10.279	22 28 54.7	17.17	1 58.38	0.423	4 51 58.62
Thur.	5	4 54 7.09	10.292	22 35 35.0	16.18	1 48.09	0.436	4 55 55.18
Frid.	6	4 58 14.25	10.305	22 41 51.6	15.19	1 37.48	0.449	4 59 51.73
Sat.	7	5 2 21.71	10.317	22 47 44.3	14.19	1 26.58	0.461	5 3 48.29
Sun.	8	5 6 29.45	10.328	22 53 13.1	13.18	1 15.40	0.472	5 7 44.85
Mon.	9	5 10 37.45	10.338	22 58 17.7	12.17	1 3.96	0.482	5 11 41.41
Tues.	10	5 14 45.68	10.348	23 2 58.1	11.16	0 52.29	0.492	5 15 37.97
Wed.	11	5 18 54.14	10.357	23 7 14.2	10.15	0 40.39	0.501	5 19 34.53
Thur.	12	5 23 2.81	10.365	23 11 5.9	9.14	0 28.27	0.509	5 23 31.08
Frid.	13	5 27 11.67	10.373	23 14 33.3	8.12	0 15.97	0.517	5 27 27.64
Sat.	14	5 31 20.70	10.379	23 17 36.2	7.10	0 3.50	0.523	5 31 24.20
Sun.	15	5 35 29.87	10.385	23 20 14.4	6.08	0 9.11	0.529	5 35 20.76
Mon.	16	5 39 39.17	10.389	23 22 28.1	5.05	0 21.85	0.533	5 39 17.32
Tues.	17	5 43 48.59	10.393	23 24 17.1	4.02	0 34.71	0.537	5 43 13.88
Wed.	18	5 47 58.09	10.397	23 25 41.3	2.99	0 47.65	0.541	5 47 10.44
Thur.	19	5 52 7.66	10.399	23 26 40.7	1.96	1 0.67	0.543	5 51 6.99
Frid.	20	5 56 17.27	10.400	23 27 15.4	+ 0.93	1 13.72	0.544	5 55 3.55
Sat.	21	6 0 26.88	10.400	23 27 25.2	− 0.10	1 26.77	0.544	5 59 0.11
Sun.	22	6 4 36.49	10.398	23 27 10.4	1.14	1 39.82	0.542	6 2 56.67
Mon.	23	6 8 46.06	10.396	23 26 30.6	2.18	1 52.83	0.540	6 6 53.23
Tues.	24	6 12 55.54	10.393	23 25 26.1	3.21	2 5.75	0.537	6 10 49.79
Wed.	25	6 17 4.93	10.389	23 23 56.7	4.24	2 18.59	0.533	6 14 46.34
Thur.	26	6 21 14.20	10.384	23 22 2.5	5.27	2 31.30	0.528	6 18 42.90
Frid.	27	6 25 23.32	10.377	23 19 43.8	6.29	2 43.86	0.521	6 22 39.46
Sat.	28	6 29 32.27	10.368	23 17 0.5	7.31	2 56.25	0.512	6 26 36.02
Sun.	29	6 33 41.01	10.359	23 13 52.6	8.33	3 8.43	0.503	6 30 32.58
Mon.	30	6 37 49.52	10.349	23 10 20.3	9.35	3 20.38	0.493	6 34 29.14
Tues.	31	6 41 57.78	10.339	N.23 6 23.6	10.36	3 32.08	0.483	6 38 25.70

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour.
$+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	152	71 0 10.3	0 3.9	143.65	+0.41	0.0062576	+24.2	19 16 41.03
2	153	71 57 37.4	57 30.8	143.60	0.39	.0063148	23.5	19 12 45.12
3	154	72 55 3.1	54 56.3	143.54	0.35	.0063701	22.7	19 8 49.21
4	155	73 52 27.6	52 20.6	143.49	0.28	.0064237	22.0	19 4 53.29
5	156	74 49 51.0	49 43.8	143.45	0.19	.0064758	21.3	19 0 57.38
6	157	75 47 13.3	47 5.9	143.41	+0.08	.0065263	20.6	18 57 1.47
7	158	76 44 34.6	44 27.0	143.37	−0.05	.0065752	20.0	18 53 5.56
8	159	77 41 55.0	41 47.2	143.33	0.18	.0066227	19.4	18 49 9.64
9	160	78 39 14.6	39 6.6	143.30	0.31	.0066688	18.9	18 45 13.73
10	161	79 36 33.4	36 25.3	143.27	0.44	.0067135	18.4	18 41 17.82
11	162	80 33 51.4	33 43.1	143.24	0.55	.0067570	17.9	18 37 21.91
12	163	81 31 8.8	31 0.3	143.21	0.65	.0067992	17.3	18 33 26.00
13	164	82 28 25.7	28 17.0	143.19	0.71	.0068400	16.7	18 29 30.09
14	165	83 25 42.1	25 33.2	143.17	0.75	.0068793	16.0	18 25 34.18
15	166	84 22 58.1	22 49.1	143.16	0.76	.0069171	15.3	18 21 38.26
16	167	85 20 13.9	20 4.7	143.15	0.74	.0069532	14.6	18 17 42.34
17	168	86 17 29.5	17 20.1	143.14	0.69	.0069875	13.8	18 13 46.42
18	169	87 14 44.9	14 35.3	143.14	0.61	.0070198	13.0	18 9 50.51
19	170	88 12 0.1	11 50.3	143.13	0.52	.0070500	12.1	18 5 54.60
20	171	89 9 15.1	9 5.4	143.12	0.40	.0070780	11.2	18 1 58.69
21	172	90 6 29.9	6 19.8	143.11	0.27	.0071037	10.2	17 58 2.78
22	173	91 3 44.5	3 34.2	143.11	−0.14	.0071270	9.2	17 54 6.87
23	174	92 0 59.1	0 48.6	143.10	0.00	.0071477	8.1	17 50 10.96
24	175	92 58 13.5	58 2.8	143.09	+0.13	.0071658	7.0	17 46 15.05
25	176	93 55 27.7	55 16.8	143.08	0.25	.0071812	5.8	17 42 19.14
26	177	94 52 41.6	52 30.5	143.07	0.33	.0071939	4.7	17 38 23.23
27	178	95 49 55.2	49 43.9	143.06	0.37	.0072041	3.6	17 34 27.32
28	179	96 47 8.5	46 57.0	143.05	0.38	.0072117	2.6	17 30 31.39
29	180	97 44 21.5	44 9.8	143.03	0.38	.0072169	1.6	17 26 35.48
30	181	98 41 34.2	41 22.4	143.02	0.34	.0072196	+ 0.6	17 22 39.57
31	182	99 38 46.7	38 34.7	143.01	+0.28	0.0072199	− 0.3	17 18 43.66

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
−9ˢ.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 49.9	14 48.9	54 19.3	−0.42	54 15.4	−0.22	5 12.8	1.85	6.1
2	14 48.5	14 48.8	54 14.1	−0.01	54 15.3	+0.21	5 56.0	1.75	7.1
3	14 49.9	14 51.6	54 19.1	+0.42	54 25.5	0.64	6 37.3	1.69	8.1
4	14 54.0	14 57.1	54 34.4	0.84	54 45.7	1.04	7 17.6	1.68	9.1
5	15 0.8	15 5.1	54 59.4	1.22	55 15.2	1.39	7 58.1	1.71	10.1
6	15 9.9	15 15.2	55 32.8	1.54	55 52.0	1.66	8 40.1	1.79	11.1
7	15 20.8	15 26.6	56 12.6	1.76	56 34.1	1.82	9 24.6	1.93	12.1
8	15 32.6	15 38.7	56 56.1	1.85	57 18.3	1.84	10 12.8	2.11	13.1
9	15 44.6	15 50.4	57 40.2	1.80	58 1.4	1.72	11 5.7	2.31	14.1
10	15 55.8	16 0.9	58 21.4	1.61	58 39.8	1.46	12 3.3	2.49	15.1
11	16 5.4	16 9.3	58 56.4	1.29	59 10.8	1.10	13 4.6	2.60	16.1
12	16 12.5	16 15.1	59 22.7	0.89	59 32.1	0.67	14 7.2	2.60	17.1
13	16 16.9	16 18.1	59 38.9	0.46	59 43.1	+0.24	15 8.4	2.49	18.1
14	16 18.5	16 18.4	59 44.8	+0.04	59 44.1	−0.15	16 6.4	2.33	19.1
15	16 17.6	16 16.3	59 41.2	−0.32	59 36.4	0.48	17 0.4	2.17	20.1
16	16 14.5	16 12.3	59 29.8	0.61	59 21.8	0.73	17 51.0	2.05	21.1
17	16 9.7	16 6.9	59 12.4	0.82	59 2.0	0.91	18 39.3	1.98	22.1
18	16 3.8	16 0.5	58 50.7	0.98	58 38.7	1.03	19 26.6	1.97	23.1
19	15 57.1	15 53.5	58 26.0	1.08	58 12.8	1.12	20 14.2	2.00	24.1
20	15 49.8	15 45.9	57 59.1	1.15	57 45.0	1.19	21 3.1	2.08	25.1
21	15 42.0	15 38.0	57 30.6	1.22	57 15.8	1.24	21 54.1	2.17	26.1
22	15 33.9	15 29.7	57 0.8	1.26	56 45.6	1.27	22 47.2	2.25	27.1
23	15 25.5	15 21.4	56 30.3	1.27	56 15.0	1.27	23 41.7	2.28	28.1
24	15 17.3	15 13.2	55 59.8	1.25	55 44.8	1.23	δ		29.1
25	15 9.2	15 5.4	55 30.2	1.19	55 16.2	1.13	0 36.2	2.25	0.6
26	15 1.8	14 58.5	55 3.0	1.06	54 50.8	0.97	1 29.3	2.16	1.6
27	14 55.5	14 52.8	54 39.7	0.86	54 30.0	0.74	2 19.7	2.03	2.6
28	14 50.6	14 48.9	54 21.9	0.60	54 15.5	0.45	3 7.0	1.90	3.6
29	14 47.7	14 47.1	54 11.1	−0.28	54 8.8	−0.09	3 51.2	1.78	4.6
30	14 47.1	14 47.7	54 8.8	+0.10	54 11.1	+0.30	4 33.0	1.70	5.6
31	14 49.0	14 51.0	54 15.9	+0.51	54 23.3	+0.71	5 13.3	1.66	6.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 43 30.56	1.9823	N.19 14 27.9	9.730	0	11 14 18.43	1.8223	N.10 13 19.4	12.533
1	9 45 29.37	1.9778	19 4 41.8	9.806	1	11 16 7.71	1.8204	10 0 46.1	12.574
2	9 47 27.90	1.9733	18 54 51.1	9.882	2	11 17 56.88	1.8185	9 48 10.5	12.614
3	9 49 26.16	1.9689	18 44 55.9	9.957	3	11 19 45.93	1.8168	9 35 32.5	12.654
4	9 51 24.16	1.9645	18 34 56.2	10.031	4	11 21 34.88	1.8152	9 22 52.1	12.693
5	9 53 21.90	1.9602	18 24 52.1	10.104	5	11 23 23.74	1.8136	9 10 9.4	12.731
6	9 55 19.38	1.9559	18 14 43.6	10.177	6	11 25 12.52	1.8121	8 57 24.4	12.769
7	9 57 16.60	1.9516	18 4 30.8	10.249	7	11 27 1.20	1.8106	8 44 37.1	12.806
8	9 59 13.56	1.9473	17 54 13.7	10.320	8	11 28 49.79	1.8092	8 31 47.7	12.842
9	10 1 10.27	1.9431	17 43 52.4	10.390	9	11 30 38.30	1.8079	8 18 56.1	12.878
10	10 3 6.73	1.9390	17 33 26.9	10.459	10	11 32 26.73	1.8066	8 6 2.3	12.913
11	10 5 2.95	1.9349	17 22 57.3	10.527	11	11 34 15.09	1.8055	7 53 6.5	12.948
12	10 6 58.92	1.9308	17 12 23.7	10.595	12	11 36 3.38	1.8044	7 40 8.6	12.982
13	10 8 54.65	1.9268	17 1 46.0	10.661	13	11 37 51.61	1.8033	7 27 8.7	13.015
14	10 10 50.14	1.9228	16 51 4.3	10.727	14	11 39 39.78	1.8023	7 14 6.8	13.047
15	10 12 45.39	1.9189	16 40 18.7	10.792	15	11 41 27.88	1.8014	7 1 3.0	13.079
16	10 14 40.41	1.9151	16 29 29.2	10.856	16	11 43 15.93	1.8005	6 47 57.3	13.111
17	10 16 35.21	1.9114	16 18 35.9	10.920	17	11 45 3.94	1.7998	6 34 49.7	13.142
18	10 18 29.78	1.9077	16 7 38.8	10.984	18	11 46 51.90	1.7991	6 21 40.2	13.172
19	10 20 24.13	1.9040	15 56 37.9	11.046	19	11 48 39.82	1.7985	6 8 28.9	13.201
20	10 22 18.26	1.9003	15 45 33.3	11.107	20	11 50 27.71	1.7980	5 55 16.0	13.230
21	10 24 12.16	1.8967	15 34 25.1	11.167	21	11 52 15.57	1.7975	5 42 1.4	13.258
22	10 26 5.85	1.8931	15 23 13.3	11.227	22	11 54 3.40	1.7971	5 28 45.1	13.285
23	10 27 59.33	1.8897	N.15 11 57.9	11.286	23	11 55 51.21	1.7968	N. 5 15 27.2	13.312
	MONDAY 2.					WEDNESDAY 4.			
0	10 29 52.61	1.8863	N.15 0 38.9	11.345	0	11 57 38.99	1.7965	N. 5 2 7.6	13.338
1	10 31 45.69	1.8829	14 49 16.4	11.403	1	11 59 26.76	1.7963	4 48 46.5	13.363
2	10 33 38.57	1.8795	14 37 50.6	11.459	2	12 1 14.53	1.7962	4 35 23.9	13.389
3	10 35 31.24	1.8763	14 26 21.4	11.515	3	12 3 2.30	1.7961	4 21 59.9	13.413
4	10 37 23.72	1.8732	14 14 48.9	11.571	4	12 4 50.07	1.7960	4 8 34.4	13.436
5	10 39 16.02	1.8701	14 3 13.0	11.625	5	12 6 37.83	1.7960	3 55 7.5	13.460
6	10 41 8.13	1.8670	13 51 33.8	11.679	6	12 8 25.60	1.7962	3 41 39.2	13.482
7	10 43 0.06	1.8639	13 39 51.4	11.733	7	12 10 13.38	1.7965	3 28 9.0	13.503
8	10 44 51.81	1.8609	13 28 5.9	11.786	8	12 12 1.18	1.7969	3 14 38.8	13.524
9	10 46 43.37	1.8580	13 16 17.2	11.837	9	12 13 49.01	1.7973	3 1 6.7	13.544
10	10 48 34.76	1.8552	13 4 25.4	11.888	10	12 15 36.86	1.7978	2 47 33.4	13.564
11	10 50 25.99	1.8525	12 52 30.6	11.938	11	12 17 24.74	1.7984	2 33 59.0	13.583
12	10 52 17.07	1.8498	12 40 32.8	11.988	12	12 19 12.66	1.7990	2 20 23.4	13.601
13	10 54 7.98	1.8472	12 28 32.0	12.037	13	12 21 0.62	1.7997	2 6 46.7	13.619
14	10 55 58.73	1.8446	12 16 28.3	12.086	14	12 22 48.62	1.8004	1 53 9.0	13.636
15	10 57 49.32	1.8421	12 4 21.7	12.133	15	12 24 36.66	1.8013	1 39 30.1	13.652
16	10 59 39.76	1.8396	11 52 12.3	12.180	16	12 26 24.76	1.8022	1 25 50.8	13.668
17	11 1 30.06	1.8372	11 40 0.1	12.226	17	12 28 12.92	1.8032	1 12 10.3	13.683
18	11 3 20.23	1.8349	11 27 45.1	12.272	18	12 30 1.14	1.8043	0 58 28.8	13.697
19	11 5 10.26	1.8326	11 15 27.4	12.317	19	12 31 49.43	1.8054	0 44 46.5	13.710
20	11 7 0.15	1.8304	11 3 7.0	12.361	20	12 33 37.79	1.8066	0 31 3.5	13.723
21	11 8 49.90	1.8283	10 50 44.0	12.405	21	12 35 26.22	1.8079	0 17 19.8	13.735
22	11 10 39.53	1.8262	10 38 18.4	12.449	22	12 37 14.73	1.8093	N. 0 3 35.3	13.746
23	11 12 29.04	1.8242	10 25 50.2	12.491	23	12 39 3.33	1.8108	S. 0 10 9.8	13.757
24	11 14 18.43	1.8223	N.10 13 19.4	12.533	24	12 40 52.02	1.8123	S. 0 23 55.6	13.767

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 40 52.02	1.8123	S. 0 23 55.6	13.767
1	12 42 40.80	1.8139	0 37 42.0	13.776
2	12 44 29.68	1.8156	0 51 28.8	13.784
3	12 46 18.67	1.8174	1 5 16.1	13.792
4	12 48 7.76	1.8192	1 19 3.9	13.800
5	12 49 56.96	1.8211	1 32 52.1	13.806
6	12 51 46.28	1.8231	1 46 40.6	13.811
7	12 53 35.72	1.8251	2 0 29.4	13.816
8	12 55 25.29	1.8272	2 14 18.5	13.820
9	12 57 14.99	1.8295	2 28 7.8	13.823
10	12 59 4.82	1.8318	2 41 57.3	13.825
11	13 0 54.79	1.8342	2 55 46.9	13.826
12	13 2 44.91	1.8366	3 9 36.5	13.827
13	13 4 35.18	1.8391	3 23 26.2	13.827
14	13 6 25.60	1.8417	3 37 15.8	13.826
15	13 8 16.18	1.8444	3 51 5.4	13.825
16	13 10 6.93	1.8472	4 4 54.9	13.823
17	13 11 57.85	1.8500	4 18 44.2	13.819
18	13 13 48.93	1.8529	4 32 33.2	13.815
19	13 15 40.19	1.8560	4 46 22.0	13.810
20	13 17 31.64	1.8591	5 0 10.4	13.804
21	13 19 23.28	1.8623	5 13 58.5	13.797
22	13 21 15.11	1.8655	5 27 46.2	13.790
23	13 23 7.13	1.8688	S. 5 41 33.3	13.782

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 24 59.35	1.8721	S. 5 55 19.9	13.772
1	13 26 51.78	1.8756	6 9 5.9	13.762
2	13 28 44.42	1.8792	6 22 51.3	13.750
3	13 30 37.28	1.8828	6 36 36.0	13.738
4	13 32 30.36	1.8865	6 50 19.9	13.725
5	13 34 23.66	1.8903	7 4 3.0	13.711
6	13 36 17.19	1.8941	7 17 45.3	13.696
7	13 38 10.95	1.8981	7 31 26.7	13.680
8	13 40 4.96	1.9021	7 45 7.0	13.663
9	13 41 59.21	1.9063	7 58 46.3	13.645
10	13 43 53.70	1.9105	8 12 24.5	13.626
11	13 45 48.45	1.9148	8 26 1.5	13.606
12	13 47 43.47	1.9191	8 39 37.3	13.585
13	13 49 38.75	1.9234	8 53 11.8	13.563
14	13 51 34.28	1.9278	9 6 44.9	13.540
15	13 53 30.08	1.9324	9 20 16.7	13.516
16	13 55 26.16	1.9370	9 33 47.0	13.491
17	13 57 22.53	1.9418	9 47 15.7	13.465
18	13 59 19.18	1.9466	10 0 42.9	13.438
19	14 1 16.12	1.9515	10 14 8.4	13.410
20	14 3 13.36	1.9564	10 27 32.1	13.381
21	14 5 10.89	1.9614	10 40 54.1	13.350
22	14 7 8.72	1.9665	10 54 14.2	13.318
23	14 9 6.86	1.9717	11 7 32.3	13.285
24	14 11 5.32	1.9769	S. 11 20 48.4	13.251

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 11 5.32	1.9769	S. 11 20 48.4	13.251
1	14 13 4.09	1.9822	11 34 2.4	13.216
2	14 15 3.18	1.9876	11 47 14.3	13.179
3	14 17 2.60	1.9931	12 0 24.0	13.141
4	14 19 2.35	1.9986	12 13 31.4	13.102
5	14 21 2.43	2.0042	12 26 36.4	13.062
6	14 23 2.84	2.0099	12 39 38.9	13.021
7	14 25 3.60	2.0156	12 52 38.9	12.979
8	14 27 4.71	2.0214	13 5 36.4	12.936
9	14 29 6.16	2.0273	13 18 31.2	12.891
10	14 31 7.97	2.0332	13 31 23.3	12.844
11	14 33 10.14	2.0392	13 44 12.5	12.796
12	14 35 12.68	2.0453	13 56 58.9	12.747
13	14 37 15.58	2.0515	14 9 42.3	12.698
14	14 39 18.85	2.0577	14 22 22.6	12.645
15	14 41 22.50	2.0640	14 34 59.8	12.592
16	14 43 26.53	2.0703	14 47 33.8	12.539
17	14 45 30.94	2.0767	15 0 4.4	12.482
18	14 47 35.73	2.0831	15 12 31.7	12.425
19	14 49 40.91	2.0896	15 24 55.5	12.367
20	14 51 46.49	2.0962	15 37 15.7	12.306
21	14 53 52.46	2.1029	15 49 32.4	12.245
22	14 55 58.83	2.1096	16 1 45.4	12.183
23	14 58 5.61	2.1164	S. 16 13 54.5	12.118

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 0 12.80	2.1232	S. 16 25 59.6	12.053
1	15 2 20.40	2.1300	16 38 0.8	11.986
2	15 4 28.41	2.1369	16 49 58.0	11.918
3	15 6 36.83	2.1439	17 1 51.0	11.847
4	15 8 45.67	2.1509	17 13 39.8	11.776
5	15 10 54.94	2.1580	17 25 24.2	11.702
6	15 13 4.64	2.1651	17 37 4.1	11.627
7	15 15 14.76	2.1723	17 48 39.5	11.552
8	15 17 25.31	2.1795	18 0 10.3	11.473
9	15 19 36.30	2.1868	18 11 36.5	11.394
10	15 21 47.72	2.1941	18 22 57.9	11.313
11	15 23 59.58	2.2014	18 34 14.3	11.231
12	15 26 11.88	2.2087	18 45 25.7	11.147
13	15 28 24.62	2.2160	18 56 32.0	11.063
14	15 30 37.80	2.2234	19 7 33.2	10.975
15	15 32 51.43	2.2308	19 18 29.1	10.886
16	15 35 5.50	2.2383	19 29 19.6	10.796
17	15 37 20.02	2.2458	19 40 4.6	10.704
18	15 39 34.99	2.2533	19 50 44.1	10.610
19	15 41 50.41	2.2608	20 1 17.9	10.515
20	15 44 6.29	2.2683	20 11 45.9	10.418
21	15 46 22.62	2.2759	20 22 8.1	10.319
22	15 48 39.40	2.2835	20 32 24.3	10.219
23	15 50 56.64	2.2911	20 42 34.4	10.117
24	15 53 14.34	2.2987	S. 20 52 38.3	10.013

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 9.					WEDNESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 53 14.34	2.2987	S.20 52 38.3	10.013	0	17 51 46.71	2.6135	S.26 22 41.1	3.154
1	15 55 32.49	2.3064	21 2 36.0	9.908	1	17 54 23.65	2.6177	26 25 45.1	2.978
2	15 57 51.10	2.3140	21 12 27.3	9.801	2	17 57 0.83	2.6217	26 28 38.4	2.800
3	16 0 10.17	2.3216	21 22 12.1	9.692	3	17 59 38.26	2.6256	26 31 21.1	2.622
4	16 2 29.69	2.3292	21 31 50.4	9.581	4	18 2 15.92	2.6293	26 33 53.1	2.443
5	16 4 49.67	2.3368	21 41 22.0	9.469	5	18 4 53.79	2.6328	26 36 14.3	2.263
6	16 7 10.10	2.3444	21 50 46.8	9.355	6	18 7 31.86	2.6361	26 38 24.7	2.082
7	16 9 30.99	2.3520	22 0 4.7	9.240	7	18 10 10.13	2.6393	26 40 24.2	1.901
8	16 11 52.33	2.3596	22 9 15.7	9.123	8	18 12 48.59	2.6424	26 42 12.8	1.719
9	16 14 14.13	2.3671	22 18 19.6	9.004	9	18 15 27.24	2.6453	26 43 50.5	1.536
10	16 16 36.38	2.3746	22 27 16.3	8.884	10	18 18 6.06	2.6481	26 45 17.2	1.352
11	16 18 59.08	2.3822	22 36 5.7	8.762	11	18 20 45.03	2.6507	26 46 32.8	1.168
12	16 21 22.24	2.3897	22 44 47.8	8.638	12	18 23 24.15	2.6531	26 47 37.3	0.983
13	16 23 45.85	2.3971	22 53 22.4	8.513	13	18 26 3.41	2.6553	26 48 30.7	0.798
14	16 26 9.89	2.4045	23 1 49.4	8.386	14	18 28 42.80	2.6574	26 49 13.0	0.612
15	16 28 34.38	2.4119	23 10 8.8	8.257	15	18 31 22.31	2.6593	26 49 44.2	0.426
16	16 30 59.31	2.4192	23 18 20.4	8.126	16	18 34 1.92	2.6610	26 50 4.2	0.239
17	16 33 24.68	2.4265	23 26 24.0	7.994	17	18 36 41.64	2.6625	26 50 13.0	−0.052
18	16 35 50.50	2.4338	23 34 19.7	7.860	18	18 39 21.45	2.6639	26 50 10.5	+0.135
19	16 38 16.75	2.4410	23 42 7.3	7.725	19	18 42 1.33	2.6651	26 49 56.8	0.323
20	16 40 43.43	2.4481	23 49 46.7	7.588	20	18 44 41.28	2.6661	26 49 31.8	0.510
21	16 43 10.53	2.4552	23 57 17.9	7.449	21	18 47 21.28	2.6669	26 48 55.6	0.697
22	16 45 38.06	2.4623	24 4 40.7	7.308	22	18 50 1.33	2.6676	26 48 8.1	0.885
23	16 48 6.01	2.4693	S.24 11 55.0	7.167	23	18 52 41.41	2.6681	S.26 47 9.3	1.073
	TUESDAY 10.					THURSDAY 12.			
0	16 50 34.38	2.4762	S.24 19 0.8	7.024	0	18 55 21.51	2.6684	S.26 45 59.3	1.261
1	16 53 3.16	2.4831	24 25 57.9	6.879	1	18 58 1.62	2.6686	26 44 38.0	1.450
2	16 55 32.35	2.4899	24 32 46.3	6.732	2	19 0 41.75	2.6686	26 43 5.3	1.638
3	16 58 1.95	2.4966	24 39 25.8	6.583	3	19 3 21.87	2.6684	26 41 21.3	1.826
4	17 0 31.95	2.5032	24 45 56.4	6.434	4	19 6 1.96	2.6680	26 39 26.0	2.014
5	17 3 2.34	2.5097	24 52 17.9	6.283	5	19 8 42.02	2.6674	26 37 19.5	2.201
6	17 5 33.12	2.5162	24 58 30.4	6.130	6	19 11 22.05	2.6667	26 35 1.9	2.388
7	17 8 4.29	2.5225	25 4 33.7	5.976	7	19 14 2.03	2.6658	26 32 33.0	2.575
8	17 10 35.83	2.5288	25 10 27.6	5.820	8	19 16 41.94	2.6647	26 29 52.8	2.762
9	17 13 7.75	2.5349	25 16 12.2	5.663	9	19 19 21.78	2.6634	26 27 1.4	2.949
10	17 15 40.03	2.5410	25 21 47.3	5.505	10	19 22 1.55	2.6620	26 23 58.8	3.136
11	17 18 12.67	2.5469	25 27 12.8	5.346	11	19 24 41.23	2.6604	26 20 45.1	3.322
12	17 20 45.67	2.5528	25 32 28.8	5.185	12	19 27 20.81	2.6587	26 17 20.2	3.507
13	17 23 19.02	2.5585	25 37 35.1	5.022	13	19 30 0.28	2.6568	26 13 44.2	3.692
14	17 25 52.70	2.5642	25 42 31.5	4.858	14	19 32 39.62	2.6547	26 9 57.2	3.876
15	17 28 26.72	2.5697	25 47 18.0	4.693	15	19 35 18.83	2.6525	26 5 59.1	4.059
16	17 31 1.07	2.5751	25 51 54.6	4.526	16	19 37 57.92	2.6501	26 1 50.0	4.242
17	17 33 35.74	2.5803	25 56 21.2	4.359	17	19 40 36.89	2.6475	25 57 30.0	4.421
18	17 36 10.72	2.5854	26 0 37.8	4.191	18	19 43 15.63	2.6448	25 52 59.1	4.606
19	17 38 46.00	2.5904	26 4 44.2	4.021	19	19 45 54.23	2.6420	25 48 17.3	4.787
20	17 41 21.58	2.5953	26 8 40.3	3.849	20	19 48 32.67	2.6390	25 43 24.7	4.967
21	17 43 57.45	2.6000	26 12 26.1	3.677	21	19 51 10.92	2.6359	25 38 21.3	5.146
22	17 46 33.60	2.6047	26 16 1.6	3.501	22	19 53 48.98	2.6326	25 33 7.2	5.324
23	17 49 10.02	2.6092	26 19 26.6	3.329	23	19 56 26.84	2.6292	25 27 42.4	5.501
24	17 51 46.71	2.6135	S.26 22 41.1	3.154	24	19 59 4.48	2.6256	S.25 22 7.0	5.677

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 59 4.48	2.6256	S. 25 22 7.0	5.677
1	20 1 41.91	2.6219	25 16 21.0	5.853
2	20 4 19.11	2.6181	25 10 24.6	6.028
3	20 6 56.08	2.6142	25 4 17.7	6.201
4	20 9 32.81	2.6101	24 58 0.4	6.373
5	20 12 9.29	2.6059	24 51 32.9	6.544
6	20 14 45.52	2.6016	24 44 55.1	6.714
7	20 17 21.49	2.5972	24 38 7.1	6.883
8	20 19 57.19	2.5927	24 31 9.1	7.050
9	20 22 32.62	2.5881	24 24 1.0	7.216
10	20 25 7.76	2.5833	24 16 43.0	7.382
11	20 27 42.62	2.5785	24 9 15.1	7.546
12	20 30 17.18	2.5735	24 1 37.4	7.709
13	20 32 51.44	2.5685	23 53 50.0	7.870
14	20 35 25.40	2.5634	23 45 53.0	8.029
15	20 37 59.05	2.5583	23 37 46.4	8.188
16	20 40 32.39	2.5530	23 29 30.4	8.345
17	20 43 5.41	2.5476	23 21 5.0	8.500
18	20 45 38.10	2.5422	23 12 30.3	8.654
19	20 48 10.47	2.5367	23 3 46.4	8.807
20	20 50 42.50	2.5311	22 54 53.4	8.958
21	20 53 14.20	2.5254	22 45 51.3	9.107
22	20 55 45.55	2.5197	22 36 40.3	9.256
23	20 58 16.56	2.5140	S. 22 27 20.5	9.403

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 0 47.23	2.5082	S. 22 17 51.9	9.548
1	21 3 17.54	2.5023	22 8 14.7	9.691
2	21 5 47.50	2.4964	21 58 29.0	9.833
3	21 8 17.10	2.4905	21 48 34.7	9.973
4	21 10 46.35	2.4845	21 38 32.0	10.112
5	21 13 15.23	2.4784	21 28 21.2	10.249
6	21 15 43.75	2.4723	21 18 2.2	10.384
7	21 18 11.91	2.4662	21 7 35.1	10.518
8	21 20 39.70	2.4601	20 57 0.1	10.650
9	21 23 7.13	2.4540	20 46 17.1	10.780
10	21 25 34.18	2.4478	20 35 26.3	10.908
11	21 28 0.86	2.4416	20 24 28.0	11.035
12	21 30 27.17	2.4354	20 13 22.1	11.160
13	21 32 53.11	2.4292	20 2 8.8	11.284
14	21 35 18.68	2.4230	19 50 48.0	11.406
15	21 37 43.88	2.4168	19 39 19.9	11.526
16	21 40 8.70	2.4106	19 27 44.7	11.644
17	21 42 33.15	2.4044	19 16 2.5	11.761
18	21 44 57.22	2.3982	19 4 13.4	11.876
19	21 47 20.93	2.3920	18 52 17.4	11.989
20	21 49 44.26	2.3858	18 40 14.7	12.100
21	21 52 7.22	2.3796	18 28 5.3	12.209
22	21 54 29.81	2.3734	18 15 49.4	12.317
23	21 56 52.03	2.3673	18 3 27.1	12.423
24	21 59 13.89	2.3612	S. 17 50 58.5	12.528

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 59 13.89	2.3612	S. 17 50 58.5	12.528
1	22 1 35.38	2.3551	17 38 23.7	12.631
2	22 3 56.50	2.3491	17 25 42.8	12.732
3	22 6 17.26	2.3430	17 12 55.8	12.831
4	22 8 37.66	2.3370	17 0 2.9	12.929
5	22 10 57.70	2.3310	16 47 4.3	13.025
6	22 13 17.37	2.3250	16 33 59.9	13.119
7	22 15 36.69	2.3191	16 20 49.9	13.211
8	22 17 55.66	2.3132	16 7 34.5	13.301
9	22 20 14.27	2.3074	15 54 13.8	13.390
10	22 22 32.53	2.3016	15 40 47.8	13.477
11	22 24 50.45	2.2959	15 27 16.6	13.562
12	22 27 8.04	2.2902	15 13 40.2	13.645
13	22 29 25.28	2.2845	14 59 58.9	13.727
14	22 31 42.18	2.2789	14 46 12.8	13.807
15	22 33 58.74	2.2734	14 32 21.9	13.886
16	22 36 14.97	2.2679	14 18 26.3	13.963
17	22 38 30.88	2.2625	14 4 26.2	14.038
18	22 40 46.47	2.2571	13 50 21.7	14.111
19	22 43 1.73	2.2517	13 36 12.8	14.183
20	22 45 16.67	2.2464	13 21 59.6	14.253
21	22 47 31.30	2.2412	13 7 42.2	14.322
22	22 49 45.62	2.2361	12 53 20.8	14.389
23	22 51 59.63	2.2310	S. 12 38 55.5	14.454

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 54 13.33	2.2259	S. 12 24 26.3	14.517
1	22 56 26.73	2.2210	12 9 53.4	14.578
2	22 58 39.84	2.2162	11 55 16.8	14.638
3	23 0 52.67	2.2114	11 40 36.6	14.697
4	23 3 5.21	2.2067	11 25 53.0	14.754
5	23 5 17.47	2.2020	11 11 6.0	14.810
6	23 7 29.44	2.1973	10 56 15.7	14.864
7	23 9 41.14	2.1928	10 41 22.2	14.916
8	23 11 52.57	2.1883	10 26 25.7	14.966
9	23 14 3.74	2.1840	10 11 26.2	15.015
10	23 16 14.65	2.1797	9 56 23.8	15.063
11	23 18 25.30	2.1755	9 41 18.7	15.109
12	23 20 35.69	2.1713	9 26 10.8	15.153
13	23 22 45.84	2.1672	9 11 0.3	15.195
14	23 24 55.75	2.1632	8 55 47.3	15.236
15	23 27 5.41	2.1593	8 40 31.9	15.275
16	23 29 14.84	2.1554	8 25 14.2	15.313
17	23 31 24.05	2.1517	8 9 54.2	15.350
18	23 33 33.04	2.1480	7 54 32.1	15.385
19	23 35 41.81	2.1444	7 39 7.9	15.419
20	23 37 50.37	2.1408	7 23 41.8	15.451
21	23 39 58.71	2.1374	7 8 13.8	15.481
22	23 42 6.85	2.1340	6 52 44.0	15.510
23	23 44 14.79	2.1308	6 37 12.5	15.538
24	23 46 22.54	2.1276	S. 6 21 39.4	15.564

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 46 22.54	2.1276	S. 6 21 39.4	15.564
1	23 48 30.10	2.1245	6 6 4.8	15.589
2	23 50 37.48	2.1215	5 50 28.7	15.612
3	23 52 44.68	2.1186	5 34 51.3	15.633
4	23 54 51.70	2.1158	5 19 12.6	15.654
5	23 56 58.56	2.1130	5 3 32.8	15.673
6	23 59 5.25	2.1103	4 47 51.8	15.690
7	0 1 11.78	2.1077	4 32 9.8	15.706
8	0 3 18.16	2.1052	4 16 27.0	15.721
9	0 5 24.40	2.1028	4 0 43.3	15.734
10	0 7 30.49	2.1004	3 44 58.9	15.745
11	0 9 36.44	2.0981	3 29 13.9	15.755
12	0 11 42.26	2.0959	3 13 28.2	15.764
13	0 13 47.95	2.0938	2 57 42.0	15.772
14	0 15 53.52	2.0918	2 41 55.5	15.778
15	0 17 58.96	2.0899	2 26 8.6	15.783
16	0 20 4.29	2.0881	2 10 21.4	15.787
17	0 22 9.52	2.0864	1 54 34.1	15.789
18	0 24 14.65	2.0847	1 38 46.7	15.789
19	0 26 19.68	2.0831	1 22 59.4	15.788
20	0 28 24.61	2.0815	1 7 12.1	15.786
21	0 30 29.46	2.0801	0 51 24.9	15.783
22	0 32 34.23	2.0788	0 35 37.9	15.779
23	0 34 38.92	2.0777	S. 0 19 51.3	15.773

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 36 43.54	2.0764	S. 0 4 5.2	15.765
1	0 38 48.09	2.0753	N. 0 11 40.5	15.756
2	0 40 52.58	2.0743	0 27 25.6	15.747
3	0 42 57.01	2.0735	0 43 10.2	15.736
4	0 45 1.39	2.0727	0 58 54.1	15.723
5	0 47 5.73	2.0720	1 14 37.1	15.709
6	0 49 10.02	2.0713	1 30 19.1	15.694
7	0 51 14.27	2.0707	1 46 0.2	15.677
8	0 53 18.49	2.0702	2 1 40.4	15.659
9	0 55 22.69	2.0698	2 17 19.5	15.640
10	0 57 26.87	2.0695	2 32 57.4	15.619
11	0 59 31.03	2.0693	2 48 34.0	15.598
12	1 1 35.17	2.0691	3 4 9.2	15.575
13	1 3 39.31	2.0690	3 19 43.0	15.551
14	1 5 43.45	2.0690	3 35 15.4	15.526
15	1 7 47.59	2.0691	3 50 46.2	15.499
16	1 9 51.74	2.0692	4 6 15.4	15.471
17	1 11 55.90	2.0694	4 21 42.8	15.442
18	1 14 0.07	2.0697	4 37 8.5	15.411
19	1 16 4.26	2.0702	4 52 32.3	15.380
20	1 18 8.48	2.0707	5 7 54.2	15.347
21	1 20 12.74	2.0713	5 23 14.0	15.312
22	1 22 17.03	2.0719	5 38 31.7	15.277
23	1 24 21.36	2.0726	5 53 47.2	15.240
24	1 26 25.73	2.0733	N. 6 9 0.6	15.202

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 26 25.73	2.0733	N. 6 9 0.6	15.202
1	1 28 30.15	2.0742	6 24 11.7	15.163
2	1 30 34.63	2.0751	6 39 20.3	15.122
3	1 32 39.16	2.0761	6 54 26.4	15.080
4	1 34 43.75	2.0772	7 9 30.0	15.038
5	1 36 48.41	2.0784	7 24 31.0	14.994
6	1 38 53.14	2.0796	7 39 29.3	14.948
7	1 40 57.95	2.0809	7 54 24.9	14.902
8	1 43 2.84	2.0822	8 9 17.6	14.854
9	1 45 7.80	2.0836	8 24 7.4	14.804
10	1 47 12.85	2.0850	8 38 54.2	14.754
11	1 49 18.00	2.0866	8 53 38.0	14.703
12	1 51 23.25	2.0883	9 8 18.6	14.650
13	1 53 28.60	2.0900	9 22 56.0	14.596
14	1 55 34.04	2.0918	9 37 30.1	14.541
15	1 57 39.59	2.0936	9 52 1.0	14.484
16	1 59 45.25	2.0954	10 6 28.5	14.427
17	2 1 51.03	2.0973	10 20 52.4	14.368
18	2 3 56.93	2.0993	10 35 12.6	14.308
19	2 6 2.95	2.1014	10 49 29.2	14.247
20	2 8 9.10	2.1035	11 3 42.2	14.184
21	2 10 15.37	2.1057	11 17 51.5	14.120
22	2 12 21.78	2.1080	11 31 56.9	14.056
23	2 14 28.33	2.1103	N.11 45 58.3	13.990

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 16 35.01	2.1126	N.11 59 55.7	13.922
1	2 18 41.84	2.1150	12 13 49.0	13.854
2	2 20 48.82	2.1175	12 27 38.2	13.785
3	2 22 55.94	2.1200	12 41 23.3	13.714
4	2 25 3.21	2.1226	12 55 4.1	13.642
5	2 27 10.64	2.1253	13 8 40.4	13.569
6	2 29 18.24	2.1280	13 22 12.3	13.494
7	2 31 26.00	2.1307	13 35 39.7	13.419
8	2 33 33.91	2.1335	13 49 2.5	13.342
9	2 85 41.99	2.1363	14 2 20.8	13.264
10	2 37 50.24	2.1391	14 15 34.3	13.185
11	2 39 58.67	2.1420	14 28 43.0	13.104
12	2 42 7.28	2.1449	14 41 46.9	13.023
13	2 44 16.06	2.1478	14 54 45.9	12.941
14	2 46 25.02	2.1508	15 7 39.8	12.857
15	2 48 34.16	2.1538	15 20 28.7	12.772
16	2 50 43.48	2.1569	15 33 12.5	12.686
17	2 52 52.99	2.1600	15 45 51.1	12.599
18	2 55 2.70	2.1632	15 58 24.4	12.510
19	2 57 12.59	2.1664	16 10 52.4	12.421
20	2 59 22.67	2.1696	16 23 14.9	12.330
21	3 1 32.95	2.1729	16 35 32.0	12.238
22	3 3 43.42	2.1762	16 47 43.5	12.145
23	3 5 54.09	2.1794	16 59 49.4	12.051
24	3 8 4.95	2.1827	N.17 11 49.7	11.956

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 8 4.95	2.1827	N.17 11 49.7	11.956
1	3 10 16.01	2.1861	17 23 44.2	11.860
2	3 12 27.28	2.1895	17 35 32.9	11.762
3	3 14 38.75	2.1929	17 47 15.7	11.663
4	3 16 50.42	2.1963	17 58 52.5	11.563
5	3 19 2.30	2.1997	18 10 23.3	11.462
6	3 21 14.38	2.2031	18 21 48.1	11.360
7	3 23 26.67	2.2065	18 33 6.7	11.258
8	3 25 39.16	2.2100	18 44 19.1	11.154
9	3 27 51.86	2.2134	18 55 25.2	11.048
10	3 30 4.77	2.2169	19 6 24.9	10.942
11	3 32 17.88	2.2203	19 17 18.2	10.834
12	3 34 31.20	2.2238	19 28 5.1	10.726
13	3 36 44.73	2.2273	19 38 45.4	10.617
14	3 38 58.47	2.2307	19 49 19.1	10.506
15	3 41 12.42	2.2342	19 59 46.2	10.395
16	3 43 26.57	2.2376	20 10 6.6	10.283
17	3 45 40.93	2.2411	20 20 20.2	10.169
18	3 47 55.50	2.2445	20 30 26.9	10.054
19	3 50 10.27	2.2479	20 40 26.7	9.939
20	3 52 25.25	2.2513	20 50 19.6	9.822
21	3 54 40.43	2.2547	21 0 5.5	9.705
22	3 56 55.81	2.2581	21 9 44.3	9.587
23	3 59 11.40	2.2615	N.21 19 15.9	9.467

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 1 27.20	2.2649	N.21 28 40.4	9.346
1	4 3 43.20	2.2682	21 37 57.6	9.225
2	4 5 59.39	2.2715	21 47 7.5	9.103
3	4 8 15.77	2.2748	21 56 10.0	8.979
4	4 10 32.35	2.2780	22 5 5.1	8.855
5	4 12 49.12	2.2812	22 13 52.7	8.730
6	4 15 6.09	2.2844	22 22 32.8	8.604
7	4 17 23.25	2.2875	22 31 5.3	8.478
8	4 19 40.59	2.2906	22 39 30.2	8.350
9	4 21 58.11	2.2936	22 47 47.4	8.222
10	4 24 15.82	2.2966	22 55 56.9	8.093
11	4 26 33.71	2.2996	23 3 58.6	7.963
12	4 28 51.78	2.3025	23 11 52.4	7.832
13	4 31 10.02	2.3054	23 19 38.4	7.700
14	4 33 28.43	2.3082	23 27 16.4	7.567
15	4 35 47.02	2.3110	23 34 46.5	7.434
16	4 38 5.77	2.3137	23 42 8.6	7.300
17	4 40 24.68	2.3164	23 49 22.6	7.165
18	4 42 43.74	2.3190	23 56 28.5	7.030
19	4 45 2.96	2.3216	24 3 26.3	6.894
20	4 47 22.33	2.3241	24 10 15.9	6.757
21	4 49 41.86	2.3265	24 16 57.2	6.619
22	4 52 1.53	2.3289	24 23 30.3	6.481
23	4 54 21.33	2.3312	24 29 55.0	6.342
24	4 56 41.27	2.3334	N.24 36 11.4	6.203

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 56 41.27	2.3334	N.24 36 11.4	6.203
1	4 59 1.34	2.3356	24 42 19.5	6.064
2	5 1 21.54	2.3377	24 48 19.1	5.924
3	5 3 41.87	2.3397	24 54 10.3	5.783
4	5 6 2.32	2.3417	24 59 53.0	5.641
5	5 8 22.88	2.3435	25 5 27.2	5.499
6	5 10 43.55	2.3453	25 10 52.9	5.357
7	5 13 4.32	2.3471	25 16 10.0	5.214
8	5 15 25.19	2.3488	25 21 18.5	5.070
9	5 17 46.17	2.3503	25 26 18.4	4.926
10	5 20 7.24	2.3518	25 31 9.7	4.782
11	5 22 28.39	2.3531	25 35 52.3	4.637
12	5 24 49.61	2.3544	25 40 26.1	4.492
13	5 27 10.91	2.3556	25 44 51.2	4.347
14	5 29 32.28	2.3567	25 49 7.6	4.201
15	5 31 53.72	2.3577	25 53 15.4	4.055
16	5 34 15.21	2.3586	25 57 14.4	3.909
17	5 36 36.75	2.3595	26 1 4.5	3.763
18	5 38 58.35	2.3603	26 4 45.8	3.616
19	5 41 19.99	2.3609	26 8 18.3	3.469
20	5 43 41.66	2.3614	26 11 42.0	3.321
21	5 46 3.36	2.3619	26 14 56.9	3.174
22	5 48 25.09	2.3623	26 18 2.9	3.027
23	5 50 46.84	2.3625	N.26 21 0.1	2.879

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 53 8.61	2.3627	N.26 23 48.4	2.731
1	5 55 30.38	2.3628	26 26 27.8	2.583
2	5 57 52.15	2.3628	26 28 58.4	2.435
3	6 0 13.92	2.3626	26 31 20.1	2.287
4	6 2 35.68	2.3624	26 33 32.9	2.140
5	6 4 57.42	2.3621	26 35 36.8	1.992
6	6 7 19.13	2.3617	26 37 31.9	1.844
7	6 9 40.82	2.3612	26 39 18.1	1.696
8	6 12 2.47	2.3606	26 40 55.4	1.548
9	6 14 24.09	2.3598	26 42 23.9	1.400
10	6 16 45.66	2.3589	26 43 43.5	1.253
11	6 19 7.17	2.3580	26 44 54.2	1.105
12	6 21 28.62	2.3570	26 45 56.1	0.958
13	6 23 50.01	2.3558	26 46 49.1	0.811
14	6 26 11.33	2.3546	26 47 33.3	0.664
15	6 28 32.57	2.3532	26 48 8.8	0.517
16	6 30 53.73	2.3518	26 48 35.5	0.371
17	6 33 14.79	2.3502	26 48 53.4	0.225
18	6 35 35.76	2.3486	26 49 2.4	+0.079
19	6 37 56.63	2.3469	26 49 2.7	−0.067
20	6 40 17.39	2.3451	26 48 54.4	0.212
21	6 42 38.04	2.3431	26 48 37.4	0.357
22	6 44 58.57	2.3411	26 48 11.7	0.501
23	6 47 18.97	2.3390	26 47 37.3	0.645
24	6 49 39.25	2.3368	N.26 46 54.2	0.788

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 49 39.25	2.3368	N.26 46 54.2	0.788
1	6 51 59.39	2.3344	26 46 2.5	0.931
2	6 54 19.39	2.3320	26 45 2.3	1.074
3	6 56 39.24	2.3295	26 43 53.6	1.217
4	6 58 58.94	2.3269	26 42 36.3	1.359
5	7 1 18.48	2.3242	26 41 10.5	1.501
6	7 3 37.85	2.3215	26 39 36.2	1.642
7	7 5 57.06	2.3187	26 37 53.5	1.782
8	7 8 16.09	2.3158	26 36 2.4	1.922
9	7 10 34.95	2.3127	26 34 2.9	2.061
10	7 12 53.62	2.3096	26 31 55.1	2.199
11	7 15 12.10	2.3064	26 29 39.0	2.337
12	7 17 30.39	2.3031	26 27 14.7	2.474
13	7 19 48.48	2.2998	26 24 42.1	2.611
14	7 22 6.37	2.2964	26 22 1.4	2.747
15	7 24 24.05	2.2929	26 19 12.5	2.882
16	7 26 41.52	2.2893	26 16 15.5	3.016
17	7 28 58.77	2.2856	26 13 10.5	3.150
18	7 31 15.79	2.2819	26 9 57.5	3.283
19	7 33 32.59	2.2781	26 6 36.5	3.416
20	7 35 49.16	2.2742	26 3 7.6	3.548
21	7 38 5.50	2.2703	25 59 30.8	3.678
22	7 40 21.60	2.2663	25 55 46.2	3.808
23	7 42 37.46	2.2622	N.25 51 53.8	3.938

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 44 53.07	2.2581	N.25 47 53.6	4.066
1	7 47 8.43	2.2539	25 43 45.7	4.194
2	7 49 23.54	2.2496	25 39 30.2	4.321
3	7 51 38.39	2.2453	25 35 7.1	4.447
4	7 53 52.98	2.2410	25 30 36.5	4.573
5	7 56 7.31	2.2365	25 25 58.4	4.697
6	7 58 21.37	2.2320	25 21 12.8	4.820
7	8 0 35.16	2.2275	25 16 19.8	4.943
8	8 2 48.68	2.2230	25 11 19.5	5.065
9	8 5 1.93	2.2184	25 6 12.0	5.186
10	8 7 14.90	2.2138	25 0 57.2	5.307
11	8 9 27.59	2.2091	24 55 35.2	5.427
12	8 11 40.00	2.2044	24 50 6.0	5.545
13	8 13 52.13	2.1996	24 44 29.7	5.662
14	8 16 3.97	2.1948	24 38 46.5	5.779
15	8 18 15.51	2.1900	24 32 56.3	5.894
16	8 20 26.77	2.1852	24 26 59.2	6.009
17	8 22 37.74	2.1803	24 20 55.3	6.123
18	8 24 48.41	2.1754	24 14 44.5	6.235
19	8 26 58.79	2.1705	24 8 27.0	6.347
20	8 29 8.87	2.1655	24 2 2.8	6.458
21	8 31 18.65	2.1605	23 55 32.0	6.568
22	8 33 28.13	2.1555	23 48 54.6	6.677
23	8 35 37.31	2.1505	23 42 10.8	6.785
24	8 37 46.19	2.1455	N.23 35 20.5	6.892

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 37 46.19	2.1455	N.23 35 20.5	6.892
1	8 39 54.77	2.1404	23 28 23.8	6.998
2	8 42 3.04	2.1353	23 21 20.8	7.103
3	8 44 11.00	2.1302	23 14 11.4	7.207
4	8 46 18.66	2.1251	23 6 55.8	7.311
5	8 48 26.01	2.1200	22 59 34.1	7.413
6	8 50 33.06	2.1149	22 52 6.3	7.514
7	8 52 39.80	2.1098	22 44 32.4	7.614
8	8 54 46.24	2.1047	22 36 52.6	7.713
9	8 56 52.37	2.0996	22 29 6.8	7.812
10	8 58 58.19	2.0945	22 21 15.1	7.909
11	9 1 3.70	2.0894	22 13 17.7	8.005
12	9 3 8.91	2.0843	22 5 14.5	8.100
13	9 5 13.81	2.0792	21 57 5.6	8.195
14	9 7 18.41	2.0741	21 48 51.1	8.289
15	9 9 22.70	2.0690	21 40 30.9	8.382
16	9 11 26.68	2.0639	21 32 5.2	8.473
17	9 13 30.36	2.0588	21 23 34.1	8.564
18	9 15 33.74	2.0537	21 14 57.5	8.654
19	9 17 36.81	2.0487	21 6 15.6	8.742
20	9 19 39.58	2.0437	20 57 28.4	8.830
21	9 21 42.06	2.0387	20 48 36.0	8.917
22	9 23 44.24	2.0337	20 39 38.4	9.002
23	9 25 46.11	2.0287	N.20 30 35.7	9.087

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 27 47.68	2.0238	N.20 21 27.9	9.171
1	9 29 48.95	2.0189	20 12 15.1	9.255
2	9 31 49.94	2.0140	20 2 57.4	9.337
3	9 33 50.64	2.0091	19 53 34.7	9.418
4	9 35 51.04	2.0043	19 44 7.2	9.498
5	9 37 51.15	1.9995	19 34 34.9	9.577
6	9 39 50.98	1.9947	19 24 57.9	9.655
7	9 41 50.52	1.9699	19 15 16.2	9.732
8	9 43 49.77	1.9652	19 5 29.9	9.809
9	9 45 48.74	1.9605	18 55 39.1	9.885
10	9 47 47.43	1.9758	18 45 43.7	9.960
11	9 49 45.84	1.9712	18 35 43.9	10.034
12	9 51 43.98	1.9666	18 25 39.6	10.107
13	9 53 41.84	1.9620	18 15 31.0	10.178
14	9 55 39.43	1.9575	18 5 18.1	10.249
15	9 57 36.76	1.9531	17 55 1.0	10.319
16	9 59 33.82	1.9487	17 44 39.7	10.389
17	10 1 30.61	1.9443	17 34 14.3	10.458
18	10 3 27.13	1.9399	17 23 44.7	10.526
19	10 5 23.39	1.9356	17 13 11.1	10.593
20	10 7 19.40	1.9314	17 2 33.6	10.659
21	10 9 15.16	1.9272	16 51 52.1	10.724
22	10 11 10.67	1.9230	16 41 6.7	10.788
23	10 13 5.93	1.9189	16 30 17.5	10.851
24	10 15 0.93	1.9148	N.16 19 24.6	10.913

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 15 0.93	1.9148	N.16 19 24.6	10.913
1	10 16 55.69	1.9108	16 8 27.9	10.975
2	10 18 50.22	1.9068	15 57 27.5	11.036
3	10 20 44.51	1.9029	15 46 23.5	11.096
4	10 22 38.56	1.8991	15 35 15.9	11.155
5	10 24 32.38	1.8953	15 24 4.8	11.214
6	10 26 25.98	1.8915	15 12 50.2	11.272
7	10 28 19.35	1.8877	15 1 32.2	11.329
8	10 30 12.50	1.8840	14 50 10.8	11.385
9	10 32 5.42	1.8804	14 38 46.0	11.440
10	10 33 58.13	1.8768	14 27 17.9	11.494
11	10 35 50.63	1.8733	14 15 46.6	11.548
12	10 37 42.93	1.8699	14 4 12.2	11.601
13	10 39 35.02	1.8665	13 52 34.6	11.653
14	10 41 26.91	1.8632	13 40 53.9	11.705
15	10 43 18.59	1.8598	13 29 10.0	11.755
16	10 45 10.08	1.8567	13 17 23.1	11.805
17	10 47 1.38	1.8535	13 5 33.3	11.854
18	10 48 52.50	1.8504	12 53 40.6	11.902
19	10 50 43.43	1.8473	12 41 45.0	11.950
20	10 52 34.18	1.8443	12 29 46.6	11.997
21	10 54 24.75	1.8414	12 17 45.3	12.043
22	10 56 15.15	1.8385	12 5 41.3	12.088
23	10 58 5.38	1.8357	11 53 34.6	12.133
24	10 59 55.43	1.8329	N.11 41 25.3	12.177

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 59 55.43	1.8329	N.11 41 25.3	12.177
1	11 1 45.32	1.8302	11 29 13.3	12.220
2	11 3 35.06	1.8276	11 16 58.8	12.263
3	11 5 24.65	1.8251	11 4 41.7	12.305
4	11 7 14.08	1.8227	10 52 22.1	12.346
5	11 9 3.37	1.8203	10 40 0.1	12.387
6	11 10 52.51	1.8179	10 27 35.7	12.427
7	11 12 41.51	1.8156	10 15 8.9	12.466
8	11 14 30.38	1.8133	10 2 39.8	12.504
9	11 16 19.11	1.8111	9 50 8.4	12.542
10	11 18 7.71	1.8090	9 37 34.7	12.579
11	11 19 56.19	1.8070	9 24 58.9	12.615
12	11 21 44.55	1.8050	9 12 20.9	12.651
13	11 23 32.79	1.8031	8 59 40.8	12.686
14	11 25 20.92	1.8013	8 46 58.6	12.720
15	11 27 8.95	1.7996	8 34 14.3	12.754
16	11 28 56.87	1.7979	8 21 28.0	12.787
17	11 30 44.69	1.7963	8 8 39.8	12.819
18	11 32 32.42	1.7948	7 55 49.7	12.851
19	11 34 20.06	1.7933	7 42 57.7	12.883
20	11 36 7.60	1.7918	7 30 3.9	12.913
21	11 37 55.06	1.7905	7 17 8.2	12.943
22	11 39 42.44	1.7892	7 4 10.7	12.972
23	11 41 29.75	1.7880	6 51 11.6	13.000
24	11 43 17.00	1.7868	N. 6 38 10.8	13.028

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	2	18	19.3
○ Full Moon, ...	10	10	1.5
☾ Last Quarter, ...	17	3	32.1
● New Moon, ...	24	9	12.5

	d	h
☾ Apogee, ...	2	0.5
☾ Perigee, ...	14	2.5
☾ Apogee, ...	29	17.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh	P. L. of Diff.
1	Sun	W.	70° 47′ 49″	3419	72° 9′ 44″	3423	73° 31′ 34″	3427	74° 53′ 20″	3430
	Pollux	W.	30 6 55	3067	31 35 45	3069	33 4 32	3072	34 33 16	3073
	Spica	E.	60 44 12	3074	59 15 31	3079	57 46 56	3083	56 18 25	3087
	Mars	E.	66 29 34	3036	65 0 6	3040	63 30 43	3044	62 1 25	3048
	Antares	E.	106 35 51	3062	105 6 55	3065	103 38 3	3069	102 9 15	3071
2	Sun	W.	81 41 33	3437	83 3 8	3437	84 24 43	3437	85 46 18	3435
	Pollux	W.	41 56 31	3078	43 25 8	3077	44 53 46	3076	46 22 25	3075
	Spica	E.	48 56 46	3098	47 28 34	3099	46 0 23	3100	44 32 13	3101
	Mars	E.	54 35 52	3060	53 6 53	3060	51 37 55	3060	50 8 57	3060
	Antares	E.	94 45 51	3078	93 17 14	3077	91 48 36	3077	90 19 58	3075
3	Sun	W.	92 34 48	3421	93 56 41	3417	95 18 38	3412	96 40 41	3407
	Pollux	W.	53 46 16	3060	55 15 14	3056	56 44 17	3052	58 13 26	3047
	Jupiter	W.	21 11 37	3187	22 38 2	3174	24 4 42	3162	25 31 37	3150
	Spica	E.	37 11 28	3099	35 43 17	3099	34 15 6	3098	32 46 54	3097
	Mars	E.	42 43 56	3054	41 14 50	3052	39 45 41	3049	38 16 29	3045
	Antares	E.	82 56 14	3063	81 27 19	3059	79 58 19	3055	78 29 14	3050
4	Sun	W.	103 32 38	3372	104 55 26	3365	106 18 23	3356	107 41 30	3346
	Pollux	W.	65 40 55	3014	67 10 50	3007	68 40 54	2998	70 11 9	2990
	Jupiter	W.	32 49 36	3096	34 17 51	3086	35 46 18	3075	37 14 58	3064
	Regulus	W.	29 37 1	3070	31 5 47	3058	32 34 48	3045	34 4 5	3033
	Spica	E.	25 25 48	3100	23 57 38	3104	22 29 33	3109	21 1 34	3117
	Mars	E.	30 49 17	3024	29 19 34	3020	27 49 46	3015	26 19 52	3011
	Antares	E.	71 2 7	3018	69 32 17	3011	68 2 18	3003	66 32 9	2994
5	Sun	W.	114 39 55	3294	116 4 13	3282	117 28 45	3270	118 53 31	3258
	Pollux	W.	77 45 14	2941	79 16 41	2930	80 48 22	2919	82 20 17	2907
	Jupiter	W.	44 41 43	3008	46 11 46	2995	47 42 5	2983	49 12 39	2970
	Regulus	W.	41 34 19	2971	43 5 8	2958	44 36 13	2946	46 7 34	2932
	Antares	E.	58 58 36	2947	57 27 17	2937	55 55 45	2926	54 23 59	2915
	α Aquilæ	E.	105 48 57	3830	104 34 26	3807	103 19 31	3785	102 4 13	3764
	Saturn	E.	112 41 35	2941	111 10 8	2929	109 38 26	2918	108 6 30	2906
6	Sun	W.	126 1 9	3191	127 27 29	3177	128 54 6	3163	130 21 0	3148
	Pollux	W.	90 3 42	2845	91 37 12	2831	93 10 59	2818	94 45 4	2805
	Jupiter	W.	56 49 32	2904	58 21 46	2891	59 54 17	2876	61 27 6	2862
	Regulus	W.	53 48 35	2864	55 21 40	2850	56 55 3	2835	58 28 45	2821
	Antares	E.	46 41 29	2855	45 8 13	2842	43 34 40	2830	42 0 51	2817
	α Aquilæ	E.	95 42 21	3667	94 24 59	3650	93 7 19	3635	91 49 22	3620
	Saturn	E.	100 22 54	2842	98 49 21	2829	97 15 31	2815	95 41 23	2801
7	Pollux	W.	102 40 1	2733	104 15 57	2718	105 52 13	2704	107 28 48	2689
	Jupiter	W.	69 15 52	2788	70 50 35	2774	72 25 37	2758	74 1 0	2744
	Regulus	W.	66 21 59	2747	67 57 36	2732	69 33 33	2717	71 9 50	2701
	Antares	E.	34 7 35	2753	32 32 6	2741	30 56 20	2728	29 20 17	2716
	α Aquilæ	E.	85 15 49	3556	83 56 27	3546	82 36 54	3537	81 17 11	3530
	Saturn	E.	87 46 7	2730	86 10 7	2715	84 33 47	2700	82 57 7	2686
8	Jupiter	W.	82 2 53	2667	83 40 17	2652	85 18 1	2638	86 56 5	2623
	Regulus	W.	79 16 23	2626	80 54 43	2610	82 33 24	2596	84 12 25	2580
	Spica	W.	25 24 7	2689	27 1 1	2666	28 38 26	2645	30 16 20	2621
	Mars	W.	19 30 26	2667	21 7 50	2647	22 45 41	2629	24 23 57	2610
	α Aquilæ	E.	74 37 0	3511	73 16 48	3512	71 56 37	3515	70 36 30	3520

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	76° 15′ 3″	3432	77° 36′ 43″	3434	78° 58′ 21″	3436	80° 19′ 57″	3436
	Pollux	W.	36 1 58	3075	37 30 38	3077	38 59 16	3077	40 27 54	3078
	Spica	E.	54 49 59	3089	53 21 36	3092	51 53 17	3094	50 25 0	3096
	Mars	E.	60 32 12	3051	59 3 2	3054	57 33 56	3056	56 4 53	3058
	Antares	E.	100 40 30	3073	99 11 47	3075	97 43 7	3076	96 14 28	3078
2	Sun	W.	87 7 55	3433	88 29 34	3431	89 51 15	3429	91 12 59	3424
	Pollux	W.	47 51 5	3073	49 19 48	3070	50 48 34	3068	52 17 23	3065
	Spica	E.	43 4 4	3101	41 35 55	3101	40 7 47	3101	38 39 38	3100
	Mars	E.	48 39 59	3060	47 11 0	3059	45 42 0	3058	44 12 59	3056
	Antares	E.	88 51 18	3073	87 22 36	3072	85 53 52	3069	84 25 5	3066
3	Sun	W.	98 2 50	3401	99 25 5	3394	100 47 28	3387	102 9 59	3380
	Pollux	W.	59 42 41	3041	61 12 3	3035	62 41 32	3029	64 11 9	3022
	Jupiter	W.	26 58 46	3138	28 26 9	3128	29 53 45	3117	31 21 34	3106
	Spica	E.	31 18 41	3097	29 50 28	3096	28 22 14	3096	26 54 0	3098
	Mars	E.	36 47 12	3042	35 17 51	3038	33 48 25	3034	32 18 54	3029
	Antares	E.	77 0 3	3044	75 30 45	3039	74 1 20	3033	72 31 48	3026
4	Sun	W.	109 4 48	3337	110 28 17	3327	111 51 57	3316	113 15 50	3306
	Pollux	W.	71 41 34	2981	73 12 11	2972	74 42 59	2962	76 14 0	2951
	Jupiter	W.	38 43 52	3053	40 12 59	3043	41 42 19	3030	43 11 54	3019
	Regulus	W.	35 33 37	3021	37 3 24	3008	38 33 27	2996	40 3 45	2983
	Spica	E.	19 33 45	3129	18 6 10	3146	16 38 56	3172	15 12 13	3209
	Mars	E.	24 49 53	3006	23 19 48	3002	21 49 38	2999	20 19 24	2995
	Antares	E.	65 1 49	2985	63 31 18	2977	62 0 36	2967	60 29 42	2958
5	Sun	W.	120 18 32	3245	121 43 48	3232	123 9 19	3219	124 35 6	3205
	Pollux	W.	83 52 27	2895	85 24 52	2883	86 57 32	2870	88 30 29	2858
	Jupiter	W.	50 43 29	2958	52 14 35	2345	53 45 57	2931	55 17 36	2918
	Regulus	W.	47 39 12	2919	49 11 7	2905	50 43 19	2892	52 15 48	2878
	Antares	E.	52 51 59	2904	51 19 45	2891	49 47 15	2880	48 14 30	2867
	α Aquilæ	E.	100 48 33	3743	99 32 31	3723	98 16 8	3703	96 59 24	3685
	Saturn	E.	106 34 19	2894	105 1 52	2881	103 29 9	2869	101 56 10	2855
6	Sun	W.	131 48 11	3133	133 15 40	3118	134 43 28	3104	136 11 33	3088
	Pollux	W.	96 19 26	2790	97 54 7	2776	99 29 6	2762	101 4 24	2747
	Jupiter	W.	63 0 13	2848	64 33 39	2833	66 7 24	2818	67 41 28	2803
	Regulus	W.	60 2 45	2807	61 37 4	2793	63 11 43	2777	64 46 41	2762
	Antares	E.	40 26 45	2806	38 52 23	2792	37 17 44	2779	35 42 48	2766
	α Aquilæ	E.	90 31 9	3605	89 12 40	3591	87 53 56	3579	86 34 59	3567
	Saturn	E.	94 6 57	2788	92 32 13	2773	90 57 10	2759	89 21 48	2744
7	Pollux	W.	109 5 43	2674	110 42 58	2659	112 20 33	2644	113 58 28	2629
	Jupiter	W.	75 36 42	2729	77 12 44	2713	78 49 7	2698	80 25 50	2683
	Regulus	W.	72 46 28	2687	74 23 26	2672	76 0 44	2656	77 38 23	2640
	Antares	E.	27 43 59	2705	26 7 26	2694	24 30 38	2684	22 53 37	2676
	α Aquilæ	E.	79 57 20	3524	78 37 22	3518	77 17 18	3515	75 57 10	3513
	Saturn	E.	81 20 8	2671	79 42 49	2656	78 5 10	2641	76 27 11	2626
8	Jupiter	W.	88 34 36	2607	90 13 15	2593	91 52 20	2578	93 31 45	2564
	Regulus	W.	85 51 47	2566	87 31 29	2551	89 11 31	2537	90 51 53	2522
	Spica	W.	31 54 42	2604	33 33 32	2585	35 12 48	2566	36 52 30	2548
	Mars	W.	26 2 38	2593	27 41 44	2574	29 21 15	2557	31 1 9	2541
	α Aquilæ	E.	69 16 28	3523	67 56 33	3535	66 36 48	3546	65 17 15	3560

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Saturn	E.	74° 48′ 52″	2612	73° 10′ 13″	2597	71° 31′ 14″	2582	69° 51′ 54″	2568
9	Jupiter	W.	95 11 29	2550	96 51 33	2536	98 31 56	2522	100 12 38	2509
	Regulus	W.	92 32 35	2506	94 13 37	2494	95 54 58	2481	97 36 38	2467
	Spica	W.	38 32 36	2531	40 13 6	2515	41 53 58	2499	43 35 13	2484
	Mars	W.	32 41 25	2526	34 22 2	2511	36 3 0	2496	37 44 19	2482
	Saturn	E.	61 30 22	2498	59 49 6	2485	58 7 31	2472	56 25 38	2459
	α Aquilæ	E.	63 57 57	3577	62 38 58	3597	61 20 20	3621	60 2 8	3648
	Fomalhaut	E.	91 9 31	2664	89 32 3	2650	87 54 16	2637	86 16 11	2624
10	Spica	W.	52 6 42	2412	53 49 59	2400	55 33 34	2387	57 17 27	2375
	Mars	W.	46 15 43	2417	47 58 54	2404	49 42 23	2393	51 26 8	2382
	Saturn	E.	47 51 50	2401	46 8 16	2391	44 24 28	2381	42 40 26	2371
	α Aquilæ	E.	53 39 57	3855	52 25 51	3915	51 12 46	3981	50 0 48	4056
	Fomalhaut	E.	78 1 37	2568	76 21 58	2559	74 42 7	2551	73 2 4	2543
	α Pegasi	E.	97 40 28	2788	96 5 44	2774	94 30 42	2760	92 55 22	2747
11	Spica	W.	66 1 0	2322	67 46 28	2313	69 32 9	2304	71 18 3	2295
	Mars	W.	60 8 43	2332	61 53 56	2323	63 39 22	2315	65 25 0	2307
	Saturn	E.	33 57 14	2337	32 12 8	2333	30 26 56	2330	28 41 40	2328
	Fomalhaut	E.	64 39 33	2517	62 58 44	2516	61 17 53	2515	59 37 1	2515
	α Pegasi	E.	84 55 2	2701	83 18 24	2695	81 41 37	2690	80 4 44	2687
12	Spica	W.	80 10 27	2260	81 57 25	2254	83 44 32	2249	85 31 47	2245
	Mars	W.	74 15 46	2275	76 2 22	2270	77 49 6	2265	79 35 57	2261
	Antares	W.	34 16 23	2266	36 3 13	2259	37 50 13	2252	39 37 23	2246
	Fomalhaut	E.	51 13 27	2540	49 33 10	2551	47 53 8	2564	46 13 24	2580
	α Pegasi	E.	71 59 39	2687	70 22 42	2692	68 45 52	2698	67 9 10	2706
	Venus	E.	118 56 0	2402	117 12 28	2397	115 28 49	2394	113 45 5	2390
13	Mars	W.	88 31 32	2247	90 18 50	2245	92 6 11	2244	93 53 33	2243
	Antares	W.	48 35 8	2225	50 22 58	2223	52 10 52	2220	53 58 50	2218
	Fomalhaut	E.	38 1 44	2716	36 25 25	2759	34 50 3	2809	33 15 47	2869
	α Pegasi	E.	59 9 4	2775	57 34 4	2796	55 59 31	2820	54 25 29	2847
	α Arietis	E.	99 46 44	2304	98 0 50	2300	96 14 51	2298	94 28 49	2297
	Venus	E.	105 5 16	2378	103 21 9	2376	101 37 0	2375	99 52 50	2375
14	Mars	W.	102 50 29	2245	104 37 49	2247	106 25 7	2249	108 12 22	2251
	Antares	W.	62 59 3	2216	64 47 7	2217	66 35 9	2218	68 23 10	2220
	α Pegasi	E.	46 45 34	3043	45 16 14	3098	43 48 2	3160	42 21 5	3230
	α Arietis	E.	85 38 19	2297	83 52 15	2298	82 6 13	2300	80 20 14	2303
	Venus	E.	91 12 2	2379	89 27 57	2381	87 43 55	2384	85 59 57	2386
	Sun	E.	131 59 26	2511	130 18 28	2511	128 37 30	2512	126 56 34	2515
15	Antares	W.	77 22 30	2232	79 10 10	2235	80 57 46	2239	82 45 16	2242
	α Aquilæ	W.	42 25 55	4668	43 27 22	4507	44 31 8	4364	45 37 2	4236
	Saturn	W.	24 20 38	2286	26 6 58	2280	27 53 27	2276	29 40 2	2274
	α Arietis	E.	71 31 32	2324	69 46 7	2330	68 0 51	2336	66 15 44	2342
	Venus	E.	77 21 11	2404	75 37 42	2409	73 54 20	2413	72 11 4	2419
	Sun	E.	118 32 39	2527	116 52 4	2530	115 11 33	2535	113 31 8	2539
16	Antares	W.	91 41 16	2265	93 28 7	2270	95 14 51	2275	97 1 27	2281
	α Aquilæ	W.	51 32 56	3773	52 48 26	3708	54 5 5	3649	55 22 47	3595
	Saturn	W.	38 33 16	2277	40 19 50	2279	42 6 20	2282	43 52 46	2286
	α Arietis	E.	57 32 51	2385	55 48 55	2396	54 5 15	2408	52 21 51	2420

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff	XXIh.	P. L. of Diff.
8	Saturn	E.	68° 12′ 15″	2553	66° 32′ 16″	2539	64° 51′ 57″	2525	63° 11′ 19″	2512
9	Jupiter	W.	101 53 39	2495	103 34 59	2482	105 16 37	2470	106 58 32	2458
	Regulus	W.	99 18 37	2455	101 0 54	2441	102 43 30	2429	104 26 23	2417
	Spica	W.	45 16 49	2468	46 58 47	2454	48 41 5	2439	50 23 44	2426
	Mars	W.	39 25 58	2468	41 7 56	2455	42 50 13	2441	44 32 49	2429
	Saturn	E.	54 43 27	2446	53 0 58	2434	51 18 12	2422	49 35 9	2411
	α Aquilæ	E.	58 44 25	3679	57 27 16	3715	56 10 45	3756	54 54 57	3802
	Fomalhaut	E.	84 37 48	2612	82 59 9	2599	81 20 13	2588	79 41 2	2578
10	Spica	W.	59 1 38	2364	60 46 5	2353	62 30 48	2342	64 15 47	2332
	Mars	W.	53 10 9	2371	54 54 25	2360	56 38 57	2350	58 23 43	2341
	Saturn	E.	40 56 10	2363	39 11 42	2355	37 27 2	2348	35 42 12	2342
	α Aquilæ	E.	48 50 4	4141	47 40 42	4237	46 32 51	4344	45 26 39	4466
	Fomalhaut	E.	71 21 50	2536	69 41 27	2530	68 0 56	2525	66 20 17	2521
	α Pegasi	E.	91 19 45	2736	89 43 53	2726	88 7 48	2717	86 31 31	2708
11	Spica	W.	73 4 10	2287	74 50 28	2279	76 36 58	2272	78 23 38	2266
	Mars	W.	67 10 49	2300	68 56 49	2293	70 42 59	2287	72 29 18	2281
	Saturn	E.	26 56 21	2328	25 11 3	2332	23 25 50	2338	21 40 46	2349
	Fomalhaut	E.	57 56 9	2517	56 15 19	2520	54 34 34	2525	52 53 56	2532
	α Pegasi	E.	78 27 46	2684	76 50 45	2683	75 13 42	2683	73 36 39	2685
12	Spica	W.	87 19 8	2241	89 6 35	2237	90 54 8	2233	92 41 46	2231
	Mars	W.	81 22 54	2257	83 9 57	2253	84 57 5	2251	86 44 17	2249
	Antares	W.	41 24 42	2241	43 12 9	2236	44 59 43	2232	46 47 23	2229
	Fomalhaut	E.	44 34 2	2599	42 55 6	2622	41 16 41	2649	39 38 52	2679
	α Pegasi	E.	65 32 38	2716	63 56 19	2727	62 20 15	2741	60 44 29	2757
	Venus	E.	112 1 16	2387	110 17 22	2383	108 33 23	2381	106 49 21	2379
13	Mars	W.	95 40 57	2243	97 28 21	2243	99 15 44	2243	101 3 7	2244
	Antares	W.	55 46 50	2217	57 34 52	2216	59 22 55	2216	61 10 59	2216
	Fomalhaut	E.	31 42 48	2939	30 11 19	3023	28 41 35	3124	27 13 54	3245
	α Pegasi	E.	52 52 2	2877	51 19 14	2912	49 47 10	2950	48 15 55	2993
	α Arietis	E.	92 42 45	2296	90 56 39	2295	89 10 32	2295	87 24 25	2296
	Venus	E.	98 8 39	2375	96 24 28	2375	94 40 18	2376	92 56 9	2378
14	Mars	W.	109 59 33	2254	111 46 40	2257	113 33 43	2260	115 20 42	2263
	Antares	W.	70 11 8	2221	71 59 4	2224	73 46 56	2226	75 34 45	2229
	α Pegasi	E.	40 55 31	3309	39 31 30	3400	38 9 13	3502	36 48 51	3620
	α Arietis	E.	78 34 19	2306	76 48 28	2310	75 2 43	2314	73 17 4	2319
	Venus	E.	84 16 2	2389	82 32 11	2393	80 48 26	2396	79 4 46	2400
	Sun	E.	125 15 41	2516	123 34 50	2519	121 54 3	2521	120 13 19	2524
15	Antares	W.	84 32 41	2246	86 20 0	2251	88 7 12	2255	89 54 18	2260
	α Aquilæ	W.	46 44 54	4122	47 54 34	4021	49 5 53	3929	50 18 43	3848
	Saturn	W.	31 26 40	2372	33 13 20	2272	35 0 0	2273	36 46 39	2274
	α Arietis	E.	64 30 46	2350	62 45 59	2358	61 1 24	2366	59 17 1	2375
	Venus	E.	70 27 56	2424	68 44 56	2430	67 2 4	2435	65 19 19	2441
	Sun	E.	111 50 49	2543	110 10 36	2548	108 30 29	2553	106 50 29	2557
16	Antares	W.	98 47 54	2287	100 34 13	2293	102 20 23	2298	104 6 25	2304
	α Aquilæ	W.	56 41 27	3547	58 0 59	3504	59 21 19	3465	60 42 22	3431
	Saturn	W.	45 39 6	2290	47 25 20	2294	49 11 28	2298	50 57 30	2302
	α Arietis	E.	50 38 45	2433	48 55 57	2448	47 13 30	2463	45 31 25	2480

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
16	Venus	E.	63° 36′ 42″	2447	61° 54′ 14″	2454	60° 11′ 56″	2460	58° 29′ 47″	2467
	Sun	E.	105 10 35	2563	103 30 49	2569	101 51 11	2574	100 11 40	2580
17	Antares	W.	105 52 18	2311	107 38 2	2317	109 23 36	2324	111 9 1	2330
	α Aquilæ	W.	62 4 3	3400	63 26 19	3373	64 49 6	3348	66 12 22	3327
	Saturn	W.	52 43 26	2308	54 29 14	2313	56 14 54	2319	58 0 26	2324
	Fomalhaut	W.	27 16 39	3218	28 42 27	3126	30 10 5	3051	31 39 15	2986
	α Arietis	E.	43 49 43	2498	42 8 27	2518	40 27 39	2539	38 47 20	2564
	Venus	E.	50 1 31	2504	48 20 23	2511	46 39 25	2519	44 58 38	2527
	Sun	E.	91 56 13	2612	90 17 34	2618	88 39 4	2625	87 0 43	2632
18	α Aquilæ	W.	73 13 53	3256	74 38 56	3247	76 4 9	3242	77 29 29	3237
	Saturn	W.	66 45 59	2355	68 30 39	2362	70 15 9	2368	71 59 30	2375
	Fomalhaut	W.	39 21 20	2792	40 55 58	2769	42 31 6	2750	44 6 39	2734
	α Pegasi	W.	28 20 41	5057	29 16 52	4771	30 16 52	4530	31 20 18	4325
	α Arietis	E.	30 35 32	2738	28 59 43	2789	27 25 1	2849	25 51 37	2921
	Venus	E.	36 37 39	2571	34 58 4	2580	33 18 41	2589	31 39 31	2599
	Sun	E.	78 51 24	2669	77 14 2	2676	75 36 50	2684	73 59 49	2692
19	α Aquilæ	W.	84 36 55	3236	86 2 22	3240	87 27 44	3245	88 53 0	3252
	Saturn	W.	80 38 48	2409	82 22 10	2417	84 5 21	2424	85 48 22	2431
	Fomalhaut	W.	52 8 41	2687	53 45 38	2683	55 22 41	2680	56 59 48	2678
	α Pegasi	W.	37 17 20	3661	38 34 49	3576	39 53 49	3503	41 14 10	3439
	Sun	E.	65 57 19	2732	64 21 21	2740	62 45 34	2748	61 9 58	2756
20	α Aquilæ	W.	95 56 56	3303	97 21 4	3317	98 44 56	3332	100 8 30	3350
	Saturn	W.	94 20 48	2469	96 2 45	2477	97 44 31	2485	99 26 6	2492
	Fomalhaut	W.	65 5 41	2681	66 42 47	2683	68 19 50	2686	69 56 49	2689
	α Pegasi	W.	48 11 20	3220	49 37 6	3190	51 3 27	3165	52 30 18	3143
	Sun	E.	53 14 45	2800	51 40 17	2808	50 6 0	2818	48 31 55	2827
21	Saturn	W.	107 51 11	2534	109 31 37	2542	111 11 52	2551	112 51 55	2559
	α Aquilæ	W.	107 0 55	3456	108 22 8	3482	109 42 52	3511	111 3 4	3541
	Fomalhaut	W.	78 0 16	2715	79 36 36	2722	81 12 47	2729	82 48 49	2736
	α Pegasi	W.	59 50 11	3070	61 18 57	3061	62 47 54	3054	64 16 59	3048
	Sun	E.	40 44 32	2875	39 11 41	2884	37 39 2	2895	36 6 37	2906
27	Sun	W.	30 17 32	3357	31 40 38	3363	33 3 37	3370	34 26 28	3376
	Spica	E.	76 33 23	2989	75 2 56	2996	73 32 38	3004	72 2 30	3012
	Mars	E.	84 52 33	3069	83 23 45	3078	81 55 8	3086	80 26 41	3093
28	Sun	W.	41 18 59	3406	42 41 9	3410	44 3 14	3415	45 25 13	3421
	Spica	E.	64 34 5	3046	63 4 49	3052	61 35 40	3057	60 6 38	3063
	Mars	E.	73 6 41	3129	71 39 6	3135	70 11 39	3141	68 44 19	3148
	Antares	E.	110 26 41	3035	108 57 12	3040	107 27 49	3046	105 58 33	3050
29	Sun	W.	52 13 51	3440	53 35 22	3443	54 56 50	3445	56 18 16	3447
	Spica	E.	52 43 5	3087	51 14 39	3091	49 46 18	3094	48 18 1	3098
	Mars	E.	61 29 17	3171	60 2 33	3174	58 35 53	3178	57 9 17	3181
	Antares	E.	98 33 31	3070	97 4 48	3073	95 36 6	3076	94 7 27	3078
30	Sun	W.	63 4 57	3452	64 26 15	3451	65 47 34	3450	67 8 54	3449
	Spica	E.	40 57 35	3111	39 29 39	3113	38 1 45	3114	36 33 53	3116
	Mars	E.	49 57 3	3190	48 30 42	3190	47 4 21	3191	45 38 1	3191
	Antares	E.	86 44 42	3082	85 16 11	3082	83 47 40	3082	82 19 8	3081

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
16	Venus	E.	56° 47′ 48″	2474	55° 5′ 58″	2481	53° 24′ 18″	2489	51° 42′ 49″	2497
	Sun	E.	98 32 18	2586	96 53 4	2592	95 13 58	2599	93 35 1	2605
17	Antares	W.	112 54 17	2337	114 39 23	2344	116 24 18	2350	118 9 4	2358
	α Aquilæ	W.	67 36 2	3308	69 0 4	3292	70 24 25	3278	71 49 2	3266
	Saturn	W.	59 45 50	2331	61 31 5	2336	63 16 12	2342	65 1 10	2348
	Fomalhaut	W.	33 9 45	2933	34 41 22	2889	36 13 55	2851	37 47 17	2819
	α Arietis	E.	37 7 35	2591	35 28 27	2621	33 50 1	2655	32 12 20	2694
	Venus	E.	43 18 3	2535	41 37 39	2544	39 57 27	2553	38 17 27	2561
	Sun	E.	85 22 32	2639	83 44 30	2646	82 6 38	2654	80 28 56	2661
18	α Aquilæ	W.	78 54 54	3234	80 20 23	3232	81 45 54	3232	83 11 25	3233
	Saturn	W.	73 43 41	2382	75 27 42	2388	77 11 34	2395	78 55 16	2402
	Fomalhaut	W.	45 42 34	2721	47 18 46	2710	48 55 13	2701	50 31 52	2693
	α Pegasi	W.	32 26 48	4150	33 36 3	3999	34 47 44	3870	36 1 34	3758
	α Arietis	E.	24 19 45	3006	22 49 40	3110	21 21 43	3239	19 56 20	3399
	Venus	E.	30 0 35	2610	28 21 53	2620	26 43 25	2631	25 5 12	2641
	Sun	E.	72 22 58	2699	70 46 17	2707	69 9 47	2716	67 33 28	2723
19	α Aquilæ	W.	90 18 8	3259	91 43 7	3268	93 7 56	3278	94 32 33	3290
	Saturn	W.	87 31 12	2438	89 13 52	2446	90 56 21	2453	92 38 40	2461
	Fomalhaut	W.	58 36 58	2677	60 14 9	2676	61 51 21	2677	63 28 32	2678
	α Pegasi	W.	42 35 42	3383	43 58 18	3333	45 21 51	3291	46 46 13	3253
	Sun	E.	59 34 33	2765	57 59 19	2773	56 24 16	2782	54 49 25	2791
20	α Aquilæ	W.	101 31 44	3368	102 54 37	3387	104 17 8	3408	105 39 15	3432
	Saturn	W.	101 7 30	2501	102 48 42	2509	104 29 43	2517	106 10 33	2525
	Fomalhaut	W.	71 33 43	2694	73 10 31	2698	74 47 13	2704	76 23 48	2709
	α Pegasi	W.	53 57 36	3124	55 25 17	3107	56 53 18	3092	58 21 37	3080
	Sun	E.	46 58 2	2836	45 24 21	2845	43 50 52	2855	42 17 36	2965
21	Saturn	W.	114 31 46	2568	116 11 25	2577	117 50 51	2586	119 30 5	2596
	α Aquilæ	W.	112 22 43	3573	113 41 47	3608	115 0 13	3645	116 17 59	3684
	Fomalhaut	W.	84 24 41	2744	86 0 23	2751	87 35 55	2760	89 11 16	2767
	α Pegasi	W.	65 46 12	3045	67 15 29	3042	68 44 50	3040	70 14 13	3039
	Sun	E.	34 34 26	2917	33 2 29	2927	31 30 45	2939	29 59 16	2952
27	Sun	W.	35 49 12	3382	37 11 49	3388	38 34 19	3394	39 56 42	3400
	Spica	E.	70 32 32	3019	69 2 43	3026	67 33 2	3032	66 3 29	3039
	Mars	E.	78 58 23	3101	77 30 15	3108	76 2 15	3115	74 34 24	3122
28	Sun	W.	46 47 6	3425	48 8 54	3430	49 30 37	3433	50 52 16	3437
	Spica	E.	58 37 43	3068	57 8 54	3073	55 40 12	3078	54 11 36	3083
	Mars	E.	67 17 7	3153	65 50 1	3158	64 23 1	3162	62 56 6	3167
	Antares	E.	104 29 22	3055	103 0 17	3060	101 31 18	3064	100 2 24	3067
29	Sun	W.	57 39 39	3449	59 1 0	3450	60 22 20	3451	61 43 39	3452
	Spica	E.	46 49 49	3101	45 21 41	3104	43 53 36	3106	42 25 34	3109
	Mars	E.	55 42 45	3183	54 16 16	3185	52 49 49	3188	51 23 25	3189
	Antares	E.	92 38 51	3080	91 10 17	3081	89 41 44	3082	88 13 13	3082
30	Sun	W.	68 30 15	3447	69 51 38	3445	71 13 4	3442	72 34 33	3438
	Spica	E.	35 6 3	3119	33 38 16	3119	32 10 30	3121	30 42 46	3123
	Mars	E.	44 11 41	3190	42 45 20	3189	41 18 58	3188	39 52 35	3187
	Antares	E.	80 50 35	3079	79 22 0	3077	77 53 22	3075	76 24 42	3072

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	6 41 58.38	10.340	N.23 6 23.0	10.36	15 46.14	68.78	3 32.11	0.483
Wed.	2	6 46 6.39	10.328	23 2 2.0	11.37	15 46.14	68.74	3 43.54	0.472
Thur.	3	6 50 14.10	10.314	22 57 16.8	12.38	15 46.15	68.70	3 54.66	0.458
Frid.	4	6 54 21.48	10.300	22 52 7.8	13.38	15 46.16	68.66	4 5.45	0.443
Sat.	5	6 58 28.52	10.285	22 46 34.8	14.38	15 46.18	68.61	4 15.91	0.428
Sun.	6	7 2 35.21	10.270	22 40 38.0	15.36	15 46.20	68.56	4 26.00	0.413
Mon.	7	7 6 41.53	10.254	22 34 17.7	16.33	15 46.22	68.51	4 35.73	0.397
Tues.	8	7 10 47.46	10.239	22 27 34.1	17.30	15 46.25	68.46	4 45.09	0.382
Wed.	9	7 14 52.99	10.222	22 20 27.1	18.27	15 46.28	68.40	4 54.03	0.365
Thur.	10	7 18 58.10	10.205	22 12 57.1	19.23	15 46.31	68.34	5 2.55	0.348
Frid.	11	7 23 2.79	10.187	22 5 4.2	20.18	15 46.35	68.28	5 10.66	0.330
Sat.	12	7 27 7.04	10.168	21 56 48.6	21.12	15 46.39	68.22	5 18.34	0.311
Sun.	13	7 31 10.83	10.149	21 48 10.2	22.06	15 46.43	68.15	5 25.56	0.292
Mon.	14	7 35 14.16	10.129	21 39 9.7	22.99	15 46.48	68.08	5 32.21	0.272
Tues.	15	7 39 17.02	10.109	21 29 46.9	23.91	15 46.53	68.01	5 38.59	0.252
Wed.	16	7 43 19.39	10.089	21 20 2.0	24.82	15 46.58	67.94	5 44.39	0.232
Thur.	17	7 47 21.26	10.068	21 9 55.5	25.72	15 46.64	67.86	5 49.68	0.211
Frid.	18	7 51 22.64	10.046	20 59 27.5	26.61	15 46.70	67.79	5 54.49	0.190
Sat.	19	7 55 23.51	10.024	20 48 38.1	27.49	15 46.77	67.71	5 58.79	0.168
Sun.	20	7 59 23.84	10.002	20 37 27.6	28.37	15 46.84	67.63	6 2.54	0.146
Mon.	21	8 3 23.62	9.979	20 25 56.1	29.24	15 46.92	67.55	6 5.75	0.123
Tues.	22	8 7 22.85	9.956	20 14 4.1	30.09	15 47.00	67.47	6 8.43	0.100
Wed.	23	8 11 21.50	9.932	20 1 51.8	30.93	15 47.09	67.39	6 10.52	0.076
Thur.	24	8 15 19.58	9.908	19 49 19.2	31.76	15 47.19	67.31	6 12.03	0.052
Frid.	25	8 19 17.07	9.883	19 36 26.8	32.59	15 47.29	67.22	6 12.96	0.027
Sat.	26	8 23 13.96	9.858	19 23 14.8	33.40	15 47.39	67.14	6 13.29	0.002
Sun.	27	8 27 10.24	9.834	19 9 43.4	34.20	15 47.50	67.05	6 13.00	0.022
Mon.	28	8 31 5.91	9.808	18 55 53.1	34.99	15 47.61	66.97	6 12.12	0.048
Tues.	29	8 35 0.97	9.782	18 41 44.0	35.76	15 47.73	66.88	6 10.64	0.074
Wed.	30	8 38 55.42	9.756	18 27 16.5	36.51	15 47.85	66.80	6 8.54	0.100
Thur.	31	8 42 49.24	9.730	18 12 30.9	37.26	15 47.98	66.71	6 5.81	0.126
Frid.	32	8 46 42.43	9.704	N.17 57 27.6	38.01	15 48.11	66.63	6 2.45	0.152

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	6 41 57.78	10.339	N.23 6 23.6	10.36	3 32.08	0.483	6 38 25.70
Wed.	2	6 46 5.76	10.327	23 2 2.7	11.37	3 43.51	0.472	6 42 22.25
Thur.	3	6 50 13.44	10.313	22 57 17.6	12.38	3 54.63	0.458	6 46 18.81
Frid.	4	6 54 20.79	10.299	22 52 8.7	13.38	4 5.42	0.443	6 50 15.37
Sat.	5	6 58 27.81	10.284	22 46 35.8	14.38	4 15.88	0.428	6 54 11.93
Sun.	6	7 2 34.46	10.269	22 40 39.2	15.36	4 25.97	0.413	6 58 8.49
Mon.	7	7 6 40.75	10.253	22 34 19.0	16.33	4 35.70	0.397	7 2 5.05
Tues.	8	7 10 46.66	10.238	22 27 35.4	17.30	4 45.06	0.382	7 6 1.60
Wed.	9	7 14 52.16	10.221	22 20 28.6	18.27	4 54.00	0.365	7 9 58.16
Thur.	10	7 18 57.24	10.206	22 12 58.7	19.23	5 2.52	0.348	7 13 54.72
Frid.	11	7 23 1.91	10.186	22 5 5.9	20.18	5 10.63	0.330	7 17 51.28
Sat.	12	7 27 6.14	10.167	21 56 50.3	21.12	5 18.31	0.311	7 21 47.83
Sun.	13	7 31 9.92	10.148	21 48 12.2	22.06	5 25.52	0.292	7 25 44.40
Mon.	14	7 35 13.23	10.128	21 39 11.8	22.99	5 32.28	0.272	7 29 40.95
Tues.	15	7 39 16.07	10.108	21 29 49.1	23.91	5 38.56	0.252	7 33 37.51
Wed.	16	7 43 18.43	10.088	21 20 4.4	24.82	5 44.36	0.232	7 37 34.07
Thur.	17	7 47 20.29	10.067	21 9 58.0	25.72	5 49.66	0.211	7 41 30.63
Frid.	18	7 51 21.65	10.046	20 59 30.1	26.61	5 54.47	0.190	7 45 27.18
Sat.	19	7 55 22.51	10.024	20 48 40.8	27.49	5 58.77	0.168	7 49 23.74
Sun.	20	7 59 22.82	10.002	20 37 30.4	28.37	6 2.52	0.146	7 53 20.30
Mon.	21	8 3 22.60	9.979	20 25 59.0	29.24	6 5.74	0.123	7 57 16.86
Tues.	22	8 7 21.82	9.956	20 14 7.1	30.09	6 8.41	0.100	8 1 13.41
Wed.	23	8 11 20.47	9.932	20 1 54.9	30.93	6 10.50	0.076	8 5 9.97
Thur.	24	8 15 18.55	9.908	19 49 22.5	31.76	6 12.02	0.052	8 9 6.53
Frid.	25	8 19 16.04	9.883	19 36 30.2	32.59	6 12.96	0.027	8 13 3.08
Sat.	26	8 23 12.93	9.858	19 23 18.2	33.40	6 13.29	0.002	8 16 59.64
Sun.	27	8 27 9.21	9.834	19 9 47.0	34.20	6 13.01	0.022	8 20 56.20
Mon.	28	8 31 4.89	9.808	18 55 56.7	34.99	6 12.13	0.048	8 24 52.76
Tues.	29	8 34 59.96	9.782	18 41 47.7	35.76	6 10.65	0.074	8 28 49.31
Wed.	30	8 38 54.42	9.756	18 27 20.2	36.51	6 8.55	0.100	8 32 45.87
Thur.	31	8 42 48.25	9.730	18 12 34.7	37.26	6 5.82	0.126	8 36 42.43
Frid.	32	8 46 41.45	9.704	N.17 57 31.4	38.01	6 2.47	0.152	8 40 38.98

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. $+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	182	99 38 46.7	38 34.7	143.01	+0.28	0.0072199	− 0.3	17 18 43.66
2	183	100 35 58.8	35 46.6	143.00	0.19	.0072180	1.2	17 14 47.75
3	184	101 33 10.6	32 58.2	142.98	+0.09	.0072141	2.0	17 10 51.84
4	185	102 30 22.1	30 9.5	142.98	−0.03	.0072083	2.8	17 6 55.93
5	186	103 27 33.5	27 20.7	142.97	0.16	.0072007	3.5	17 3 0.01
6	187	104 24 44.8	24 31.8	142.97	0.29	.0071914	4.2	16 59 4.09
7	188	105 21 56.0	21 42.8	142.97	0.42	.0071805	4.8	16 55 8.18
8	189	106 19 7.3	18 53.9	142.97	0.54	.0071681	5.4	16 51 12.27
9	190	107 16 18.6	16 5.0	142.98	0.64	.0071542	6.0	16 47 16.36
10	191	108 13 30.1	13 16.3	142.99	0.71	.0071388	6.7	16 43 20.44
11	192	109 10 41.9	10 27.9	143.00	0.74	.0071220	7.3	16 39 24.53
12	193	110 7 54.0	7 39.8	143.02	0.74	.0071038	7.9	16 35 28.62
13	194	111 5 6.6	4 52.2	143.04	0.73	.0070841	8.5	16 31 32.71
14	195	112 2 19.7	2 5.2	143.06	0.68	.0070628	9.2	16 27 36.79
15	196	112 59 33.4	59 18.7	143.08	0.61	.0070398	9.9	16 23 40.88
16	197	113 56 47.9	56 33.0	143.11	0.51	.0070151	10.7	16 19 44.97
17	198	114 54 3.2	53 48.1	143.15	0.39	.0069885	11.5	16 15 49.06
18	199	115 51 19.2	51 4.0	143.18	0.26	.0069599	12.4	16 11 53.15
19	200	116 48 35.9	48 20.6	143.21	−0.13	.0069292	13.3	16 7 57.24
20	201	117 45 53.4	45 37.9	143.24	0.00	.0068963	14.2	16 4 1.33
21	202	118 43 11.7	42 56.0	143.28	+0.13	.0068611	15.2	16 0 5.42
22	203	119 40 30.8	40 14.9	143.31	0.25	.0068235	16.2	15 56 9.50
23	204	120 37 50.7	37 34.6	143.34	0.34	.0067834	17.2	15 52 13.59
24	205	121 35 11.4	34 55.2	143.37	0.40	.0067407	18.2	15 48 17.68
25	206	122 32 32.8	32 16.4	143.40	0.43	.0066954	19.3	15 44 21.77
26	207	123 29 54.8	29 38.2	143.43	0.43	.0066476	20.3	15 40 25.85
27	208	124 27 17.5	27 0.7	143.46	0.40	.0065973	21.3	15 36 29.94
28	209	125 24 40.8	24 23.9	143.49	0.35	.0065446	22.3	15 32 34.03
29	210	126 22 4.8	21 47.8	143.51	0.27	.0064897	23.2	15 28 38.12
30	211	127 19 29.4	19 12.2	143.54	0.17	.0064326	24.1	15 24 42.21
31	212	128 16 54.6	16 37.2	143.56	+0.05	.0063735	25.0	15 20 46.30
32	213	129 14 20.2	14 2.6	143.58	−0.08	0.0063125	−25.8	15 16 50.40

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
—9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 49.0	14 51.0	54 15.9	+0.51	54 23.3	+0.71	5 13.3	1.66	6.6
2	14 53.7	14 57.1	54 33.2	0.93	54 45.5	1.13	5 53.2	1.67	7.6
3	15 1.1	15 5.8	55 0.3	1.34	55 17.5	1.53	6 33.7	1.72	8.6
4	15 11.1	15 16.9	55 36.9	1.70	55 58.3	1.86	7 16.2	1.83	9.6
5	15 23.2	15 29.9	56 21.5	1.99	56 46.0	2.10	8 1.9	1.99	10.6
6	15 36.8	15 44.0	57 11.6	2.16	57 37.8	2.19	8 52.0	2.19	11.6
7	15 51.1	15 58.1	58 4.1	2.17	58 29.8	2.11	9 47.1	2.41	12.6
8	16 4.8	16 11.1	58 54.4	1.99	59 17.4	1.83	10 47.1	2.59	13.6
9	16 16.7	16 21.6	59 38.2	1.62	59 56.2	1.37	11 50.3	2.66	14.6
10	16 25.7	16 28.8	60 11.0	1.09	60 22.4	0.79	12 54.0	2.62	15.6
11	16 30.8	16 31.8	60 29.9	+0.47	60 33.7	+0.15	13 55.2	2.48	16.6
12	16 31.8	16 30.8	60 33.6	−0.16	60 29.8	−0.46	14 52.6	2.30	17.6
13	16 28.8	16 26.0	60 22.6	0.73	60 12.4	0.97	15 46.0	2.15	18.6
14	16 22.5	16 18.4	59 59.5	1.17	59 44.3	1.33	16 36.2	2.04	19.6
15	16 13.8	16 8.9	59 27.5	1.46	59 9.4	1.55	17 24.5	1.99	20.6
16	16 3.7	15 58.4	58 50.4	1.60	58 31.0	1.63	18 12.3	2.00	21.6
17	15 53.1	15 47.8	58 11.4	1.63	57 51.9	1.62	19 0.7	2.05	22.6
18	15 42.6	15 37.5	57 32.6	1.59	57 13.8	1.54	19 50.6	2.12	23.6
19	15 32.5	15 27.7	56 55.6	1.49	56 38.1	1.43	20 42.4	2.20	24.6
20	15 23.1	15 18.7	56 21.8	1.37	56 5.3	1.30	21 35.8	2.25	25.6
21	15 14.6	15 10.7	55 50.1	1.24	55 35.6	1.17	22 29.8	2.24	26.6
22	15 7.0	15 3.5	55 21.9	1.10	55 9.1	1.03	23 23.0	2.18	27.6
23	15 0.2	14 57.2	54 57.2	0.96	54 46.2	0.88			28.6
24	14 54.5	14 52.1	54 36.2	0.79	54 27.2	0.70	0 14.2	2.07	0.1
25	14 49.9	14 48.1	54 19.8	0.60	54 12.6	0.50	1 2.4	1.94	1.1
26	14 46.7	14 45.6	54 7.3	0.39	54 3.4	−0.26	1 47.6	1.82	2.1
27	14 45.0	14 44.8	54 1.1	−0.12	54 0.6	+0.03	2 30.1	1.73	3.1
28	14 45.2	14 46.1	54 2.0	+0.19	54 5.4	0.37	3 10.7	1.66	4.1
29	14 47.6	14 49.8	54 10.9	0.56	54 18.7	0.75	3 50.3	1.64	5.1
30	14 52.5	14 55.9	54 28.8	0.94	54 41.3	1.13	4 30.0	1.67	6.1
31	14 59.9	15 4.6	54 56.1	1.33	55 13.2	1.52	5 10.8	1.74	7.1
32	15 9.9	15 15.8	55 32.7	+1.71	55 54.4	+1.89	5 54.1	1.87	8.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 1.					THURSDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 43 17.00	1.7868	N. 6 38 10.8	13.028	0	13 9 7.75	1.8194	S. 4 7 5.8	13.607
1	11 45 4.18	1.7857	6 25 8.3	13.055	1	13 10 56.99	1.8220	4 20 42.1	13.602
2	11 46 51.29	1.7847	6 12 4.2	13.082	2	13 12 46.39	1.8247	4 34 18.0	13.596
3	11 48 38.35	1.7838	5 58 58.5	13.108	3	13 14 35.95	1.8274	4 47 53.6	13.590
4	11 50 25.35	1.7830	5 45 51.3	13.133	4	13 16 25.68	1.8302	5 1 28.8	13.583
5	11 52 12.30	1.7822	5 32 42.6	13.158	5	13 18 15.58	1.8331	5 15 3.6	13.576
6	11 53 59.21	1.7815	5 19 32.4	13.182	6	13 20 5.65	1.8361	5 28 37.9	13.567
7	11 55 46.08	1.7808	5 6 20.8	13.205	7	13 21 55.90	1.8392	5 42 11.7	13.558
8	11 57 32.91	1.7802	4 53 7.8	13.228	8	13 23 46.35	1.8424	5 55 44.8	13.548
9	11 59 19.71	1.7797	4 39 53.5	13.250	9	13 25 36.99	1.8456	6 9 17.3	13.537
10	12 1 6.47	1.7793	4 26 37.8	13.271	10	13 27 27.82	1.8489	6 22 49.2	13.525
11	12 2 53.21	1.7789	4 13 20.9	13.292	11	13 29 18.85	1.8523	6 36 20.4	13.513
12	12 4 39.94	1.7786	4 0 2.8	13.312	12	13 31 10.09	1.8558	6 49 50.7	13.500
13	12 6 26.65	1.7784	3 46 43.5	13.332	13	13 33 1.54	1.8593	7 3 20.2	13.485
14	12 8 13.35	1.7783	3 33 23.0	13.351	14	13 34 53.20	1.8629	7 16 48.9	13.469
15	12 10 0.05	1.7782	3 20 1.4	13.369	15	13 36 45.09	1.8667	7 30 16.6	13.453
16	12 11 46.74	1.7783	3 6 38.7	13.387	16	13 38 37.20	1.8705	7 43 43.3	13.436
17	12 13 33.44	1.7784	2 53 14.9	13.404	17	13 40 29.54	1.8743	7 57 9.0	13.419
18	12 15 20.15	1.7786	2 39 50.2	13.420	18	13 42 22.12	1.8782	8 10 33.6	13.401
19	12 17 6.87	1.7788	2 26 24.5	13.436	19	13 44 14.94	1.8823	8 23 57.1	13.382
20	12 18 53.61	1.7791	2 12 57.9	13.451	20	13 46 8.00	1.8865	8 37 19.4	13.362
21	12 20 40.37	1.7795	1 59 30.4	13.466	21	13 48 1.32	1.8907	8 50 40.4	13.340
22	12 22 27.15	1.7800	1 46 2.0	13.480	22	13 49 54.89	1.8950	9 4 0.2	13.317
23	12 24 13.96	1.7805	N. 1 32 32.8	13.493	23	13 51 48.72	1.8994	S. 9 17 18.6	13.294
	WEDNESDAY 2.					FRIDAY 4.			
0	12 26 0.81	1.7811	N. 1 19 2.8	13.505	0	13 53 42.82	1.9039	S. 9 30 35.5	13.270
1	12 27 47.70	1.7818	1 5 32.1	13.517	1	13 55 37.19	1.9084	9 43 50.9	13.245
2	12 29 34.63	1.7826	0 52 0.7	13.528	2	13 57 31.83	1.9130	9 57 4.9	13.219
3	12 31 21.61	1.7835	0 38 28.7	13.539	3	13 59 26.75	1.9177	10 10 17.3	13.192
4	12 33 8.65	1.7844	0 24 56.0	13.549	4	14 1 21.96	1.9225	10 23 28.0	13.164
5	12 34 55.75	1.7854	N. 0 11 22.7	13.559	5	14 3 17.45	1.9273	10 36 37.0	13.135
6	12 36 42.90	1.7865	S. 0 2 11.1	13.568	6	14 5 13.24	1.9322	10 49 44.2	13.105
7	12 38 30.12	1.7877	0 15 45.4	13.576	7	14 7 9.33	1.9373	11 2 49.6	13.074
8	12 40 17.42	1.7889	0 29 20.2	13.583	8	14 9 5.72	1.9424	11 15 53.1	13.042
9	12 42 4.79	1.7902	0 42 55.4	13.590	9	14 11 2.42	1.9476	11 28 54.7	13.009
10	12 43 52.24	1.7916	0 56 31.0	13.596	10	14 12 59.43	1.9529	11 41 54.2	12.975
11	12 45 39.78	1.7931	1 10 6.9	13.601	11	14 14 56.76	1.9582	11 54 51.6	12.939
12	12 47 27.41	1.7947	1 23 43.1	13.606	12	14 16 54.42	1.9636	12 7 46.9	12.903
13	12 49 15.14	1.7963	1 37 19.6	13.610	13	14 18 52.40	1.9692	12 20 40.0	12.866
14	12 51 2.96	1.7980	1 50 56.3	13.613	14	14 20 50.72	1.9748	12 33 30.8	12.827
15	12 52 50.89	1.7998	2 4 33.2	13.616	15	14 22 49.37	1.9804	12 46 19.2	12.787
16	12 54 38.93	1.8016	2 18 10.2	13.618	16	14 24 48.37	1.9861	12 59 5.2	12.746
17	12 56 27.08	1.8035	2 31 47.3	13.618	17	14 26 47.71	1.9919	13 11 48.7	12.704
18	12 58 15.35	1.8056	2 45 24.4	13.618	18	14 28 47.40	1.9978	13 24 29.7	12.661
19	13 0 3.75	1.8077	2 59 1.5	13.618	19	14 30 47.45	2.0037	13 37 8.1	12.617
20	13 1 52.27	1.8099	3 12 38.6	13.617	20	14 32 47.85	2.0098	13 49 43.7	12.571
21	13 3 40.92	1.8121	3 26 15.6	13.616	21	14 34 48.62	2.0159	14 2 16.6	12.524
22	13 5 29.72	1.8144	3 39 52.5	13.614	22	14 36 49.76	2.0221	14 14 46.6	12.476
23	13 7 18.66	1.8169	3 53 29.2	13.611	23	14 38 51.28	2.0284	14 27 13.7	12.427
24	13 9 7.75	1.8194	S. 4 7 5.8	13.607	24	14 40 53.17	2.0347	S. 14 39 37.9	12.377

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 40 53.17	2.0347	S. 14 39 37.9	12.377
1	14 42 55.44	2.0411	14 51 59.0	12.325
2	14 44 58.10	2.0476	15 4 16.9	12.272
3	14 47 1.15	2.0542	15 16 31.6	12.218
4	14 49 4.60	2.0608	15 28 43.0	12.162
5	14 51 8.44	2.0674	15 40 51.0	12.105
6	14 53 12.69	2.0742	15 52 55.6	12.047
7	14 55 17.35	2.0810	16 4 56.7	11.987
8	14 57 22.41	2.0879	16 16 54.1	11.926
9	14 59 27.89	2.0949	16 28 47.8	11.864
10	15 1 33.80	2.1019	16 40 37.8	11.800
11	15 3 40.13	2.1090	16 52 23.9	11.735
12	15 5 46.88	2.1161	17 4 6.0	11.669
13	15 7 54.06	2.1233	17 15 44.1	11.601
14	15 10 1.68	2.1306	17 27 18.1	11.532
15	15 12 9.73	2.1379	17 38 47.9	11.461
16	15 14 18.23	2.1453	17 50 13.4	11.388
17	15 16 27.17	2.1527	18 1 34.5	11.314
18	15 18 36.55	2.1602	18 12 51.1	11.239
19	15 20 46.38	2.1677	18 24 3.2	11.162
20	15 22 56.67	2.1753	18 35 10.6	11.084
21	15 25 7.41	2.1829	18 46 13.3	11.004
22	15 27 18.62	2.1906	18 57 11.1	10.923
23	15 29 30.29	2.1983	S. 19 8 4.0	10.840

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 31 42.42	2.2061	S. 19 18 51.9	10.755
1	15 33 55.02	2.2139	19 29 34.7	10.669
2	15 36 8.09	2.2218	19 40 12.2	10.581
3	15 38 21.63	2.2297	19 50 44.4	10.492
4	15 40 35.65	2.2376	20 1 11.3	10.401
5	● 15 42 50.14	2.2455	20 11 32.7	10.309
6	15 45 5.11	2.2535	20 21 48.4	10.215
7	15 47 20.56	2.2615	20 31 58.4	10.119
8	15 49 36.49	2.2696	20 42 2.7	10.021
9	15 51 52.91	2.2777	20 52 1.1	9.922
10	15 54 9.81	2.2857	21 1 53.4	9.821
11	15 56 27.20	2.2938	21 11 39.6	9.718
12	15 58 45.07	2.3019	21 21 19.6	9.614
13	16 1 3.43	2.3101	21 30 53.3	9.509
14	16 3 22.28	2.3182	21 40 20.7	9.402
15	16 5 41.62	2.3263	21 49 41.6	9.292
16	16 8 1.44	2.3345	21 58 55.8	9.181
17	16 10 21.75	2.3427	22 8 3.3	9.068
18	16 12 42.56	2.3509	22 17 4.0	8.954
19	16 15 3.86	2.3590	22 25 57.8	8.838
20	16 17 25.64	2.3672	22 34 44.6	8.720
21	16 19 47.91	2.3753	22 43 24.3	8.601
22	16 22 10.67	2.3834	22 51 56.7	8.479
23	16 24 33.92	2.3915	23 0 21.8	8.356
24	16 26 57.65	2.3996	S. 23 8 39.4	8.232

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 26 57.65	2.3996	S. 23 8 39.4	8.232
1	16 29 21.87	2.4077	23 16 49.5	8.106
2	16 31 46.57	2.4157	23 24 52.1	7.978
3	16 34 11.76	2.4237	23 32 46.9	7.847
4	16 36 37.42	2.4317	23 40 33.7	7.715
5	16 39 3.56	2.4396	23 48 12.6	7.582
6	16 41 30.17	2.4475	23 55 43.5	7.446
7	16 43 57.26	2.4554	24 3 6.2	7.309
8	16 46 24.82	2.4632	24 10 20.6	7.171
9	16 48 52.84	2.4709	24 17 26.7	7.031
10	16 51 21.33	2.4786	24 24 24.3	6.889
11	16 53 50.28	2.4862	24 31 13.3	6.745
12	16 56 19.68	2.4938	24 37 53.7	6.600
13	16 58 49.54	2.5014	24 44 25.3	6.453
14	17 1 19.85	2.5088	24 50 48.0	6.304
15	17 3 50.60	2.5162	24 57 1.8	6.154
16	17 6 21.79	2.5235	25 3 6.5	6.002
17	17 8 53.41	2.5307	25 9 2.0	5.848
18	17 11 25.47	2.5378	25 14 48.3	5.693
19	17 13 57.95	2.5448	25 20 25.2	5.537
20	17 16 30.85	2.5518	25 25 52.7	5.378
21	17 19 4.17	2.5587	25 31 10.6	5.218
22	17 21 37.89	2.5654	25 36 18.9	5.057
23	17 24 12.01	2.5720	S. 25 41 17.5	4.894

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 26 46.53	2.5785	S. 25 46 6.2	4.730
1	17 29 21.44	2.5850	25 50 45.0	4.564
2	17 31 56.73	2.5913	25 55 13.9	4.397
3	17 34 32.40	2.5975	25 59 32.7	4.228
4	17 37 8.43	2.6035	26 3 41.2	4.058
5	17 39 44.82	2.6094	26 7 39.5	3.886
6	17 42 21.56	2.6152	26 11 27.5	3.713
7	17 44 58.65	2.6209	26 15 5.1	3.539
8	17 47 36.07	2.6264	26 18 32.2	3.364
9	17 50 13.82	2.6318	26 21 48.8	3.188
10	17 52 51.89	2.6371	26 24 54.7	3.010
11	17 55 30.27	2.6422	26 27 49.9	2.830
12	17 58 8.96	2.6471	26 30 34.3	2.650
13	18 0 47.94	2.6519	26 33 7.9	2.469
14	18 3 27.19	2.6566	26 35 30.6	2.287
15	18 6 6.72	2.6611	26 37 42.3	2.103
16	18 8 46.52	2.6654	26 39 43.0	1.919
17	18 11 26.57	2.6695	26 41 32.6	1.734
18	18 14 6.86	2.6735	26 43 11.1	1.548
19	18 16 47.39	2.6773	26 44 38.4	1.361
20	18 19 28.14	2.6809	26 45 54.4	1.173
21	18 22 9.10	2.6844	26 46 59.1	0.984
22	18 24 50.27	2.6877	26 47 52.5	0.794
23	18 27 31.63	2.6906	26 48 34.5	0.604
24	18 30 13.17	2.6937	S. 26 49 5.0	0.413

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 30 13.17	2.6937	S. 26 49 5.0	0.413
1	18 32 54.88	2.6965	26 49 24.1	0.222
2	18 35 36.75	2.6991	26 49 31.6	−0.030
3	18 38 18.77	2.7015	26 49 27.6	+0.163
4	18 41 0.93	2.7037	26 49 12.0	0.356
5	18 43 43.21	2.7057	26 48 44.8	0.549
6	18 46 25.61	2.7075	26 48 6.1	0.743
7	18 49 8.11	2.7091	26 47 15.7	0.937
8	18 51 50.70	2.7105	26 46 13.6	1.132
9	18 54 33.37	2.7118	26 44 59.9	1.327
10	18 57 16.12	2.7129	26 43 34.4	1.522
11	18 59 58.93	2.7138	26 41 57.2	1.718
12	19 2 41.77	2.7144	26 40 8.3	1.913
13	19 5 24.65	2.7149	26 38 7.7	2.108
14	19 8 7.56	2.7152	26 35 55.4	2.303
15	19 10 50.48	2.7153	26 33 31.4	2.498
16	19 13 33.40	2.7152	26 30 55.6	2.693
17	19 16 16.31	2.7150	26 28 8.1	2.888
18	19 18 59.20	2.7146	26 25 9.0	3.083
19	19 21 42.06	2.7139	26 21 58.2	3.277
20	19 24 24.87	2.7131	26 18 35.7	3.471
21	19 27 7.63	2.7121	26 15 1.6	3.665
22	19 29 50.32	2.7109	26 11 15.9	3.859
23	19 32 32.93	2.7095	S. 26 7 18.6	4.052

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 35 15.46	2.7079	S. 26 3 9.7	4.245
1	19 37 57.89	2.7062	25 58 49.3	4.437
2	19 40 40.21	2.7043	25 54 17.3	4.628
3	19 43 22.41	2.7022	25 49 33.9	4.818
4	19 46 4.47	2.6999	25 44 39.1	5.008
5	19 48 46.39	2.6975	25 39 32.9	5.198
6	19 51 28.17	2.6949	25 34 15.3	5.386
7	19 54 9.79	2.6922	25 28 46.5	5.574
8	19 56 51.23	2.6893	25 23 6.4	5.761
9	19 59 32.49	2.6862	25 17 15.1	5.947
10	20 2 13.57	2.6829	25 11 12.7	6.132
11	20 4 54.45	2.6795	25 4 59.3	6.316
12	20 7 35.11	2.6760	24 58 34.8	6.499
13	20 10 15.56	2.6723	24 51 59.4	6.681
14	20 12 55.78	2.6685	24 45 13.1	6.862
15	20 15 35.77	2.6645	24 38 16.0	7.041
16	20 18 15.52	2.6604	24 31 8.2	7.219
17	20 20 55.02	2.6562	24 23 49.7	7.397
18	20 23 34.26	2.6518	24 16 20.6	7.573
19	20 26 13.23	2.6473	24 8 41.0	7.748
20	20 28 51.93	2.6427	24 0 50.9	7.921
21	20 31 30.35	2.6380	23 52 50.5	8.092
22	20 34 8.49	2.6332	23 44 39.9	8.262
23	20 36 46.33	2.6282	23 36 19.1	8.431
24	20 39 23.87	2.6231	S. 23 27 48.2	8.599

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 39 23.87	2.6231	S. 23 27 48.2	8.599
1	20 42 1.10	2.6179	23 19 7.3	8.765
2	20 44 38.02	2.6126	23 10 16.4	8.929
3	20 47 14.62	2.6073	23 1 15.7	9.092
4	20 49 50.89	2.6019	22 52 5.4	9.253
5	20 52 26.83	2.5963	22 42 45.4	9.413
6	20 55 2.44	2.5906	22 33 15.9	9.571
7	20 57 37.70	2.5848	22 23 36.9	9.727
8	21 0 12.62	2.5790	22 13 48.6	9.881
9	21 2 47.19	2.5732	22 3 51.1	10.034
10	21 5 21.41	2.5673	21 53 44.5	10.185
11	21 7 55.27	2.5613	21 43 28.9	10.335
12	21 10 28.77	2.5553	21 33 4.3	10.482
13	21 13 1.90	2.5492	21 22 30.9	10.628
14	21 15 34.67	2.5430	21 11 48.9	10.772
15	21 18 7.06	2.5368	21 0 58.3	10.914
16	21 20 39.08	2.5305	20 49 59.2	11.054
17	21 23 10.72	2.5242	20 38 51.8	11.192
18	21 25 41.99	2.5179	20 27 36.1	11.328
19	21 28 12.87	2.5115	20 16 12.3	11.463
20	21 30 43.37	2.5051	20 4 40.5	11.596
21	21 33 13.49	2.4987	19 53 0.8	11.727
22	21 35 43.22	2.4923	19 41 13.3	11.856
23	21 38 12.56	2.4858	S. 19 29 18.1	11.983

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 40 41.52	2.4793	S. 19 17 15.4	12.108
1	21 43 10.08	2.4728	19 5 5.3	12.230
2	21 45 38.25	2.4663	18 52 47.8	12.351
3	21 48 6.03	2.4598	18 40 23.1	12.470
4	21 50 33.42	2.4533	18 27 51.4	12.587
5	21 53 0.42	2.4468	18 15 12.7	12.702
6	21 55 27.03	2.4403	18 2 27.2	12.815
7	21 57 53.25	2.4337	17 49 35.0	12.926
8	22 0 19.08	2.4272	17 36 36.1	13.035
9	22 2 44.51	2.4207	17 23 30.7	13.142
10	22 5 9.56	2.4142	17 10 19.1	13.247
11	22 7 34.22	2.4078	16 57 1.2	13.350
12	22 9 58.49	2.4013	16 43 37.1	13.451
13	22 12 22.38	2.3949	16 30 7.0	13.549
14	22 14 45.88	2.3885	16 16 31.2	13.646
15	22 17 9.00	2.3822	16 2 49.6	13.742
16	22 19 31.74	2.3758	15 49 2.2	13.835
17	22 21 54.10	2.3695	15 35 9.3	13.926
18	22 24 16.08	2.3632	15 21 11.1	14.015
19	22 26 37.68	2.3570	15 7 7.6	14.102
20	22 28 58.92	2.3508	14 52 58.9	14.187
21	22 31 19.79	2.3447	14 38 45.2	14.270
22	22 33 40.29	2.3386	14 24 26.5	14.351
23	22 36 0.43	2.3326	14 10 3.0	14.430
24	22 38 20.20	2.3266	S. 13 55 34.9	14.507

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 13.					TUESDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 38 20.20	2.3266	S. 13 55 34.9	14.507	0	0 24 21.03	2.1206	S. 1 25 37.2	16.080
1	22 40 39.61	2.3206	13 41 2.2	14.582	1	0 26 28.19	2.1183	1 9 32.6	16.073
2	22 42 58.67	2.3147	13 26 25.1	14.655	2	0 28 35.22	2.1161	0 53 28.4	16.064
3	22 45 17.37	2.3088	13 11 43.6	14.727	3	0 30 42.12	2.1140	0 37 24.8	16.054
4	22 47 35.73	2.3030	12 56 57.9	14.796	4	0 32 48.90	2.1120	0 21 21.9	16.043
5	22 49 53.74	2.2973	12 42 8.1	14.863	5	0 34 55.56	2.1100	S. 0 5 19.7	16.030
6	22 52 11.41	2.2916	12 27 14.3	14.928	6	0 37 2.10	2.1082	N. 0 10 41.7	16.016
7	22 54 28.74	2.2860	12 12 16.7	14.992	7	0 39 8.53	2.1064	0 26 42.2	16.000
8	22 56 45.73	2.2805	11 57 15.3	15.054	8	0 41 14.87	2.1048	0 42 41.7	15.983
9	22 59 2.39	2.2750	11 42 10.3	15.113	9	0 43 21.11	2.1032	0 58 40.2	15.965
10	23 1 18.73	2.2696	11 27 1.7	15.171	10	0 45 27.25	2.1017	1 14 37.5	15.945
11	23 3 34.74	2.2642	11 11 49.7	15.227	11	0 47 33.30	2.1002	1 30 33.6	15.924
12	23 5 50.43	2.2589	10 56 34.4	15.281	12	0 49 39.27	2.0988	1 46 28.4	15.902
13	23 8 5.81	2.2537	10 41 15.9	15.333	13	0 51 45.16	2.0976	2 2 21.8	15.878
14	23 10 20.87	2.2485	10 25 54.4	15.383	14	0 53 50.98	2.0964	2 18 13.8	15.853
15	23 12 35.62	2.2434	10 10 29.9	15.432	15	0 55 56.73	2.0953	2 34 4.2	15.826
16	23 14 50.08	2.2384	9 55 2.5	15.479	16	0 58 2.42	2.0944	2 49 52.9	15.798
17	23 17 4.24	2.2335	9 39 32.4	15.524	17	1 0 8.06	2.0935	3 5 39.9	15.769
18	23 19 18.10	2.2286	9 23 59.6	15.567	18	1 2 13.64	2.0926	3 21 25.2	15.739
19	23 21 31.67	2.2238	9 8 24.3	15.609	19	1 4 19.17	2.0918	3 37 8.6	15.707
20	23 23 44.96	2.2191	8 52 46.5	15.648	20	1 6 24.66	2.0912	3 52 50.0	15.674
21	23 25 57.97	2.2145	8 37 6.4	15.686	21	1 8 30.12	2.0907	4 8 29.4	15.640
22	23 28 10.70	2.2099	8 21 24.2	15.722	22	1 10 35.54	2.0902	4 24 6.8	15.605
23	23 30 23.16	2.2054	S. 8 5 39.8	15.757	23	1 12 40.93	2.0898	N. 4 39 42.0	15.568
	MONDAY 14.					WEDNESDAY 16.			
0	23 32 35.35	2.2010	S. 7 49 53.4	15.790	0	1 14 46.31	2.0895	N. 4 55 14.9	15.530
1	23 34 47.28	2.1967	7 34 5.1	15.820	1	1 16 51.67	2.0892	5 10 45.5	15.490
2	23 36 58.96	2.1925	7 18 15.0	15.849	2	1 18 57.01	2.0890	5 26 13.7	15.449
3	23 39 10.38	2.1883	7 2 23.2	15.877	3	1 21 2.34	2.0888	5 41 39.4	15.408
4	23 41 21.56	2.1842	6 46 29.8	15.903	4	1 23 7.67	2.0888	5 57 2.6	15.365
5	23 43 32.49	2.1803	6 30 34.9	15.927	5	1 25 13.00	2.0888	6 12 23.2	15.321
6	23 45 43.19	2.1764	6 14 38.6	15.949	6	1 27 18.33	2.0889	6 27 41.1	15.275
7	23 47 53.66	2.1726	5 58 41.0	15.970	7	1 29 23.67	2.0892	6 42 56.2	15.228
8	23 50 3.90	2.1689	5 42 42.2	15.989	8	1 31 29.03	2.0895	6 58 8.5	15.181
9	23 52 13.92	2.1652	5 26 42.3	16.007	9	1 33 34.41	2.0898	7 13 17.9	15.132
10	23 54 23.72	2.1616	5 10 41.4	16.023	10	1 35 39.81	2.0902	7 28 24.3	15.081
11	23 56 33.31	2.1581	4 54 39.6	16.037	11	1 37 45.24	2.0908	7 43 27.6	15.029
12	23 58 42.69	2.1547	4 38 37.0	16.049	12	1 39 50.71	2.0914	7 58 27.8	14.976
13	0 0 51.87	2.1513	4 22 33.7	16.060	13	1 41 56.21	2.0920	8 13 24.8	14.923
14	0 3 0.85	2.1481	4 6 29.8	16.070	14	1 44 1.75	2.0928	8 28 18.6	14.869
15	0 5 9.64	2.1450	3 50 25.4	16.078	15	1 46 7.34	2.0936	8 43 9.1	14.813
16	0 7 18.25	2.1420	3 34 20.5	16.084	16	1 48 12.98	2.0944	8 57 56.1	14.756
17	0 9 26.68	2.1390	3 18 15.3	16.089	17	1 50 18.67	2.0953	9 12 39.7	14.697
18	0 11 34.93	2.1361	3 2 9.8	16.092	18	1 52 24.42	2.0963	9 27 19.7	14.638
19	0 13 43.01	2.1333	2 46 4.2	16.093	19	1 54 30.23	2.0974	9 41 56.1	14.577
20	0 15 50.93	2.1306	2 29 58.6	16.093	20	1 56 36.11	2.0986	9 56 28.9	14.515
21	0 17 58.68	2.1279	2 13 53.0	16.092	21	1 58 42.06	2.0998	10 10 57.9	14.451
22	0 20 6.28	2.1253	1 57 47.5	16.090	22	2 0 48.08	2.1011	10 25 23.0	14.387
23	0 22 13.73	2.1229	1 41 42.2	16.086	23	2 2 54.18	2.1024	10 39 44.3	14.322
24	0 24 21.03	2.1206	S. 1 25 37.2	16.080	24	2 5 0.37	2.1038	N. 10 54 1.6	14.256

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 5 0.37	2.1038	N.10 54 1.6	14.256
1	2 7 6.64	2.1053	11 8 14.9	14.188
2	2 9 13.00	2.1068	11 22 24.1	14.119
3	2 11 19.45	2.1083	11 36 29.2	14.050
4	2 13 26.00	2.1100	11 50 30.1	13.980
5	2 15 32.65	2.1117	12 4 26.7	13.908
6	2 17 39.40	2.1135	12 18 19.0	13.835
7	2 19 46.26	2.1153	12 32 6.9	13.760
8	2 21 53.23	2.1172	12 45 50.2	13.685
9	2 24 0.31	2.1191	12 59 29.0	13.609
10	2 26 7.52	2.1211	13 13 3.3	13.532
11	2 28 14.85	2.1232	13 26 32.9	13.453
12	2 30 22.30	2.1252	13 39 57.7	13.373
13	2 32 29.88	2.1273	13 53 17.7	13.293
14	2 34 37.58	2.1295	14 6 32.9	13.212
15	2 36 45.42	2.1318	14 19 43.1	13.129
16	2 38 53.40	2.1341	14 32 48.4	13.046
17	2 41 1.51	2.1364	14 45 48.7	12.962
18	2 43 9.77	2.1388	14 58 43.8	12.876
19	2 45 18.17	2.1412	15 11 33.7	12.788
20	2 47 26.72	2.1437	15 24 18.4	12.700
21	2 49 35.41	2.1462	15 36 57.8	12.612
22	2 51 44.26	2.1487	15 49 31.8	12.523
23	2 53 53.26	2.1513	N.16 2 0.4	12.433

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 56 2.42	2.1539	N.16 14 23.6	12.340
1	2 58 11.73	2.1566	16 26 41.2	12.247
2	3 0 21.21	2.1593	16 38 53.2	12.153
3	3 2 30.85	2.1620	16 50 59.5	12.058
4	3 4 40.65	2.1647	17 3 0.1	11.962
5	3 6 50.62	2.1675	17 14 54.9	11.865
6	3 9 0.75	2.1703	17 26 43.9	11.767
7	3 11 11.05	2.1732	17 38 27.0	11.668
8	3 13 21.53	2.1760	17 50 4.1	11.568
9	3 15 32.18	2.1789	18 1 35.2	11.468
10	3 17 43.00	2.1818	18 13 0.2	11.366
11	3 19 54.00	2.1847	18 24 19.0	11.263
12	3 22 5.17	2.1877	18 35 31.7	11.159
13	3 24 16.52	2.1907	18 46 38.1	11.054
14	3 26 28.05	2.1936	18 57 38.2	10.948
15	3 28 39.76	2.1966	19 8 31.9	10.842
16	3 30 51.64	2.1996	19 19 19.3	10.735
17	3 33 3.70	2.2026	19 30 0.2	10.627
18	3 35 15.95	2.2056	19 40 34.5	10.518
19	3 37 28.38	2.2087	19 51 2.3	10.408
20	3 39 40.99	2.2117	20 1 23.4	10.296
21	3 41 53.78	2.2147	20 11 37.8	10.183
22	3 44 6.76	2.2177	20 21 45.4	10.070
23	3 46 19.92	2.2206	20 31 46.2	9.957
24	3 48 33.25	2.2236	N.20 41 40.2	9.843

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 48 33.25	2.2236	N.20 41 40.2	9.843
1	3 50 46.77	2.2266	20 51 27.3	9.727
2	3 53 0.47	2.2296	21 1 7.4	9.610
3	3 55 14.35	2.2328	21 10 40.5	9.493
4	3 57 28.41	2.2359	21 20 6.6	9.375
5	3 59 42.66	2.2389	21 29 25.5	9.256
6	4 1 57.08	2.2419	21 38 37.3	9.136
7	4 4 11.68	2.2448	21 47 41.9	9.016
8	4 6 26.46	2.2478	21 56 39.2	8.895
9	4 8 41.41	2.2507	22 5 29.2	8.772
10	4 10 56.54	2.2536	22 14 11.9	8.649
11	4 13 11.84	2.2565	22 22 47.1	8.525
12	4 15 27.32	2.2594	22 31 14.9	8.401
13	4 17 42.97	2.2622	22 39 35.2	8.276
14	4 19 58.79	2.2650	22 47 48.0	8.150
15	4 22 14.78	2.2678	22 55 53.2	8.023
16	4 24 30.93	2.2706	23 3 50.8	7.895
17	4 26 47.25	2.2733	23 11 40.7	7.767
18	4 29 3.72	2.2760	23 19 22.9	7.638
19	4 31 20.36	2.2787	23 26 57.3	7.509
20	4 33 37.16	2.2813	23 34 24.0	7.379
21	4 35 54.11	2.2838	23 41 42.8	7.248
22	4 38 11.21	2.2863	23 48 53.7	7.116
23	4 40 28.46	2.2888	N.23 55 56.7	6.983

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 42 45.86	2.2912	N.24 2 51.7	6.850
1	4 45 3.40	2.2936	24 9 38.8	6.717
2	4 47 21.09	2.2959	24 16 17.8	6.583
3	4 49 38.91	2.2982	24 22 48.8	6.449
4	4 51 56.87	2.3004	24 29 11.7	6.314
5	4 54 14.96	2.3026	24 35 26.4	6.178
6	4 56 33.18	2.3047	24 41 33.0	6.042
7	4 58 51.52	2.3068	24 47 31.4	5.905
8	5 1 9.99	2.3088	24 53 21.6	5.767
9	5 3 28.57	2.3107	24 59 3.5	5.629
10	5 5 47.27	2.3126	25 4 37.1	5.491
11	5 8 6.08	2.3144	25 10 2.4	5.352
12	5 10 25.00	2.3161	25 15 19.4	5.213
13	5 12 44.02	2.3178	25 20 28.0	5.073
14	5 15 3.13	2.3194	25 25 28.2	4.933
15	5 17 22.34	2.3209	25 30 20.0	4.793
16	5 19 41.64	2.3224	25 35 3.4	4.652
17	5 22 1.02	2.3238	25 39 38.3	4.511
18	5 24 20.49	2.3251	25 44 4.7	4.370
19	5 26 40.03	2.3263	25 48 22.6	4.228
20	5 28 59.64	2.3274	25 52 32.0	4.086
21	5 31 19.32	2.3285	25 56 32.8	3.943
22	5 33 39.06	2.3295	26 0 25.1	3.800
23	5 35 58.86	2.3304	26 4 8.8	3.657
24	5 38 18.71	2.3312	N.26 7 44.0	3.514

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 38 18.71	2.3312	N.26 7 44.0	3.514	0	7 29 28.90	2.2667	N.26 11 36.1	3.259
1	5 40 38.61	2.3320	26 11 10.6	3.371	1	7 31 44.80	2.2633	26 8 16.6	3.391
2	5 42 58.55	2.3326	26 14 28.5	3.227	2	7 34 0.50	2.2598	26 4 49.2	3.522
3	5 45 18.53	2.3332	26 17 37.8	3.083	3	7 36 15.99	2.2563	26 1 14.0	3.652
4	5 47 38.54	2.3337	26 20 38.5	2.939	4	7 38 31.26	2.2527	25 57 31.0	3.781
5	5 49 58.57	2.3341	26 23 30.5	2.795	5	7 40 46.32	2.2491	25 53 40.3	3.909
6	5 52 18.63	2.3344	26 26 13.9	2.651	6	7 43 1.15	2.2454	25 49 41.9	4.037
7	5 54 38.70	2.3347	26 28 48.6	2.507	7	7 45 15.76	2.2416	25 45 35.8	4.165
8	5 56 58.79	2.3348	26 31 14.7	2.362	8	7 47 30.14	2.2377	25 41 22.1	4.291
9	5 59 18.89	2.3349	26 33 32.1	2.218	9	7 49 44.29	2.2338	25 37 0.8	4.417
10	6 1 38.98	2.3349	26 35 40.9	2.073	10	7 51 58.20	2.2298	25 32 32.0	4.542
11	6 3 59.07	2.3348	26 37 41.0	1.928	11	7 54 11.87	2.2258	25 27 55.8	4.066
12	6 6 19.15	2.3346	26 39 32.4	1.784	12	7 56 25.29	2.2217	25 23 12.1	4.789
13	6 8 39.22	2.3343	26 41 15.1	1.640	13	7 58 38.47	2.2176	25 18 21.0	4.912
14	6 10 59.26	2.3338	26 42 49.2	1.495	14	8 0 51.40	2.2134	25 13 22.6	5.034
15	6 13 19.27	2.3333	26 44 14.6	1.351	15	8 3 4.08	2.2092	25 8 16.9	5.155
16	6 15 39.25	2.3327	26 45 31.3	1.206	16	8 5 16.50	2.2050	25 3 4.0	5.275
17	6 17 59.19	2.3320	26 46 39.4	1.062	17	8 7 28.67	2.2007	24 57 43.9	5.394
18	6 20 19.09	2.3312	26 47 38.8	0.918	18	8 9 40.58	2.1963	24 52 16.7	5.513
19	6 22 38.94	2.3304	26 48 29.6	0.774	19	8 11 52.22	2.1918	24 46 42.4	5.631
20	6 24 58.74	2.3294	26 49 11.7	0.630	20	8 14 3.60	2.1873	24 41 1.0	5.747
21	6 27 18.47	2.3283	26 49 45.2	0.487	21	8 16 14.71	2.1828	24 35 12.7	5.863
22	6 29 38.14	2.3272	26 50 10.1	0.343	22	8 18 25.54	2.1783	24 29 17.4	5.978
23	6 31 57.74	2.3260	N.26 50 26.3	0.199	23	8 20 36.10	2.1737	N.24 23 15.2	6.093
TUESDAY 22.					THURSDAY 24.				
0	6 34 17.26	2.3247	N.26 50 34.0	+0.056	0	8 22 46.39	2.1692	N.24 17 6.2	6.206
1	6 36 36.70	2.3233	26 50 33.1	−0.087	1	8 24 56.40	2.1646	24 10 50.5	6.318
2	6 38 56.05	2.3218	26 50 23.6	0.229	2	8 27 6.14	2.1600	24 4 28.0	6.429
3	6 41 15.31	2.3202	26 50 5.6	0.371	3	8 29 15.60	2.1553	23 57 58.9	6.540
4	6 43 34.47	2.3185	26 49 39.1	0.513	4	8 31 24.77	2.1506	23 51 23.2	6.650
5	6 45 53.52	2.3167	26 49 4.1	0.654	5	8 33 33.66	2.1458	23 44 40.9	6.759
6	6 48 12.47	2.3148	26 48 20.6	0.796	6	8 35 42.27	2.1411	23 37 52.1	6.866
7	6 50 31.30	2.3128	26 47 28.6	0.937	7	8 37 50.59	2.1363	23 30 56.9	6.973
8	6 52 50.01	2.3108	26 46 28.2	1.077	8	8 39 58.63	2.1315	23 23 55.3	7.079
9	6 55 8.59	2.3087	26 45 19.4	1.217	9	8 42 6.38	2.1267	23 16 47.4	7.184
10	6 57 27.05	2.3065	26 44 2.2	1.357	10	8 44 13.84	2.1219	23 9 33.2	7.288
11	6 59 45.37	2.3042	26 42 36.6	1.496	11	8 46 21.01	2.1171	23 2 12.8	7.392
12	7 2 3.55	2.3018	26 41 2.7	1.635	12	8 48 27.89	2.1123	22 54 46.2	7.494
13	7 4 21.58	2.2993	26 39 20.4	1.773	13	8 50 34.48	2.1074	22 47 13.5	7.595
14	7 6 39.46	2.2967	26 37 29.9	1.911	14	8 52 40.78	2.1026	22 39 34.8	7.695
15	7 8 57.18	2.2941	26 35 31.1	2.048	15	8 54 46.79	2.0977	22 31 50.1	7.795
16	7 11 14.75	2.2914	26 33 24.1	2.185	16	8 56 52.50	2.0928	22 23 59.4	7.893
17	7 13 32.15	2.2886	26 31 8.9	2.321	17	8 58 57.92	2.0878	22 16 2.9	7.990
18	7 15 49.38	2.2857	26 28 45.6	2.457	18	9 1 3.04	2.0829	22 8 0.6	8.086
19	7 18 6.43	2.2827	26 26 14.2	2.592	19	9 3 7.87	2.0781	21 59 52.5	8.182
20	7 20 23.30	2.2797	26 23 34.6	2.727	20	9 5 12.41	2.0732	21 51 38.7	8.277
21	7 22 39.99	2.2766	26 20 46.9	2.861	21	9 7 16.66	2.0683	21 43 19.2	8.371
22	7 24 56.49	2.2734	26 17 51.3	2.994	22	9 9 20.61	2.0634	21 34 54.2	8.463
23	7 27 12.79	2.2701	26 14 47.7	3.127	23	9 11 24.27	2.0585	21 26 23.6	8.555
24	7 29 28.90	2.2667	N.26 11 36.1	3.259	24	9 13 27.63	2.0536	N.21 17 47.6	8.646

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 25.					**SUNDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 13 27.63	2.0536	N.21 17 47.6	8.646	0	10 46 50.04	1.8503	N.12 56 1.0	11.917
1	9 15 30.70	2.0488	21 9 6.2	8.735	1	10 48 40.96	1.8471	12 44 4.6	11.964
2	9 17 33.49	2.0439	21 0 19.4	8.824	2	10 50 31.69	1.8439	12 32 5.3	12.010
3	9 19 35.98	2.0391	20 51 27.3	8.912	3	10 52 22.23	1.8408	12 20 3.3	12.056
4	9 21 38.18	2.0342	20 42 29.9	8.999	4	10 54 12.59	1.8378	12 7 58.6	12.101
5	9 23 40.09	2.0294	20 33 27.3	9.085	5	10 56 2.77	1.8348	11 55 51.2	12.145
6	9 25 41.71	2.0246	20 24 19.7	9.170	6	10 57 52.77	1.8319	11 43 41.2	12.188
7	9 27 43.04	2.0198	20 15 7.0	9.254	7	10 59 42.60	1.8291	11 31 28.6	12.230
8	9 29 44.09	2.0150	20 5 49.2	9.337	8	11 1 32.26	1.8262	11 19 13.6	12.271
9	9 31 44.85	2.0103	19 56 26.4	9.420	9	11 3 21.75	1.8234	11 6 56.1	12.312
10	9 33 45.32	2.0055	19 46 58.8	9.501	10	11 5 11.07	1.8207	10 54 36.1	12.352
11	9 35 45.51	2.0008	19 37 26.3	9.581	11	11 7 0.23	1.8181	10 42 13.8	12.392
12	9 37 45.42	1.9961	19 27 49.1	9.660	12	11 8 49.24	1.8155	10 29 49.1	12.431
13	9 39 45.04	1.9914	19 18 7.1	9.739	13	11 10 38.09	1.8130	10 17 22.1	12.468
14	9 41 44.39	1.9868	19 8 20.4	9.816	14	11 12 26.80	1.8105	10 4 52.9	12.505
15	9 43 43.46	1.9822	18 58 29.1	9.893	15	11 14 15.36	1.8081	9 52 21.5	12.541
16	9 45 42.25	1.9776	18 48 33.3	9.968	16	11 16 3.77	1.8058	9 39 48.0	12.577
17	9 47 40.77	1.9730	18 38 33.0	10.043	17	11 17 52.05	1.8035	9 27 12.3	12.612
18	9 49 39.01	1.9684	18 28 28.2	10.117	18	11 19 40.19	1.8013	9 14 34.6	12.646
19	9 51 36.98	1.9639	18 18 19.0	10.189	19	11 21 28.20	1.7992	9 1 54.8	12.680
20	9 53 34.68	1.9594	18 8 5.5	10.261	20	11 23 16.09	1.7971	8 49 13.0	12.713
21	9 55 32.11	1.9550	17 57 47.7	10.332	21	11 25 3.85	1.7950	8 36 29.3	12.744
22	9 57 29.28	1.9506	17 47 25.6	10.402	22	11 26 51.49	1.7930	8 23 43.7	12.775
23	9 59 26.18	1.9462	N.17 36 59.3	10.472	23	11 28 39.01	1.7911	N. 8 10 56.3	12.806
	SATURDAY 26.					**MONDAY 28.**			
0	10 1 22.83	1.9419	N.17 26 29.0	10.541	0	11 30 26.42	1.7893	N. 7 58 7.0	12.836
1	10 3 19.22	1.9376	17 15 54.6	10.608	1	11 32 13.72	1.7875	7 45 16.0	12.865
2	10 5 15.34	1.9333	17 5 16.1	10.674	2	11 34 0.92	1.7858	7 32 23.2	12.893
3	10 7 11.21	1.9291	16 54 33.7	10.739	3	11 35 48.01	1.7841	7 19 28.8	12.921
4	10 9 6.83	1.9249	16 43 47.4	10.804	4	11 37 35.01	1.7825	7 6 32.7	12.948
5	10 11 2.19	1.9207	16 32 57.2	10.868	5	11 39 21.91	1.7810	6 53 35.0	12.975
6	10 12 57.31	1.9166	16 22 3.3	10.931	6	11 41 8.73	1.7795	6 40 35.7	13.001
7	10 14 52.19	1.9126	16 11 5.6	10.993	7	11 42 55.46	1.7781	6 27 34.9	13.026
8	10 16 46.82	1.9085	16 0 4.2	11.054	8	11 44 42.10	1.7768	6 14 32.6	13.050
9	10 18 41.21	1.9045	15 48 59.2	11.114	9	11 46 28.67	1.7756	6 1 28.9	13.073
10	10 20 35.36	1.9006	15 37 50.5	11.173	10	11 48 15.17	1.7744	5 48 23.8	13.096
11	10 22 29.28	1.8967	15 26 38.3	11.232	11	11 50 1.60	1.7733	5 35 17.4	13.118
12	10 24 22.96	1.8928	15 15 22.7	11.290	12	11 51 47.96	1.7722	5 22 9.6	13.140
13	10 26 16.41	1.8890	15 4 3.6	11.347	13	11 53 34.26	1.7712	5 9 0.5	13.162
14	10 28 9.64	1.8852	14 52 41.1	11.403	14	11 55 20.50	1.7703	4 55 50.2	13.182
15	10 30 2.64	1.8815	14 41 15.3	11.458	15	11 57 6.69	1.7694	4 42 38.7	13.201
16	10 31 55.42	1.8778	14 29 46.2	11.512	16	11 58 52.83	1.7686	4 29 26.1	13.220
17	10 33 47.98	1.8742	14 18 13.9	11.566	17	12 0 38.93	1.7679	4 16 12.3	13.238
18	10 35 40.33	1.8706	14 6 38.3	11.619	18	12 2 24.98	1.7673	4 2 57.5	13.256
19	10 37 32.46	1.8671	13 54 59.6	11.670	19	12 4 10.99	1.7667	3 49 41.6	13.273
20	10 39 24.38	1.8637	13 43 17.9	11.721	20	12 5 56.98	1.7662	3 36 24.7	13.289
21	10 41 16.10	1.8603	13 31 33.1	11.772	21	12 7 42.94	1.7657	3 23 6.8	13.305
22	10 43 7.61	1.8569	13 19 45.3	11.821	22	12 9 28.87	1.7653	3 9 48.1	13.320
23	10 44 58.92	1.8536	13 7 54.6	11.869	23	12 11 14.78	1.7650	2 56 28.5	13.334
24	10 46 50.04	1.8503	N.12 56 1.0	11.917	24	12 13 0.67	1.7648	N. 2 43 8.0	13.348

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 13 0.67	1.7648	N. 2 43 8.0	13.348
1	12 14 46.55	1.7646	2 29 46.7	13.362
2	12 16 32.42	1.7645	2 16 24.6	13.374
3	12 18 18.29	1.7645	2 3 1.8	13.385
4	12 20 4.16	1.7646	1 49 38.4	13.396
5	12 21 50.04	1.7647	1 36 14.3	13.407
6	12 23 35.92	1.7649	1 22 49.6	13.417
7	12 25 21.81	1.7651	1 9 24.3	13.426
8	12 27 7.73	1.7655	0 55 58.5	13.434
9	12 28 53.67	1.7659	0 42 32.2	13.442
10	12 30 39.64	1.7664	0 29 5.5	13.449
11	12 32 25.64	1.7669	0 15 38.3	13.456
12	12 34 11.67	1.7675	N. 0 2 10.8	13.462
13	12 35 57.74	1.7682	S. 0 11 17.1	13.467
14	12 37 43.86	1.7690	0 24 45.2	13.471
15	12 39 30.02	1.7698	0 38 13.6	13.475
16	12 41 16.24	1.7707	0 51 42.2	13.478
17	12 43 2.51	1.7718	1 5 10.9	13.480
18	12 44 48.85	1.7729	1 18 39.8	13.482
19	12 46 35.25	1.7740	1 32 8.8	13.483
20	12 48 21.73	1.7752	1 45 37.8	13.483
21	12 50 8.28	1.7764	1 59 6.8	13.483
22	12 51 54.90	1.7778	2 12 35.8	13.482
23	12 53 41.61	1.7792	S. 2 26 4.7	13.481

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 55 28.41	1.7807	S. 2 39 33.5	13.479
1	12 57 15.30	1.7823	2 53 2.2	13.476
2	12 59 2.29	1.7840	3 6 30.6	13.472
3	13 0 49.38	1.7858	3 19 58.8	13.468
4	13 2 36.58	1.7876	3 33 26.8	13.463
5	13 4 23.89	1.7895	3 46 54.4	13.458
6	13 6 11.32	1.7915	4 0 21.7	13.452
7	13 7 58.87	1.7935	4 13 48.6	13.444
8	13 9 46.54	1.7956	4 27 15.0	13.436
9	13 11 34.34	1.7978	4 40 40.9	13.427
10	13 13 22.28	1.8001	4 54 6.3	13.418
11	13 15 10.35	1.8024	5 7 31.1	13.408
12	13 16 58.57	1.8048	5 20 55.3	13.397
13	13 18 46.94	1.8074	5 34 18.8	13.386
14	13 20 35.46	1.8100	5 47 41.6	13.374
15	18 22 24.14	1.8127	6 1 3.7	13.362
16	13 24 12.98	1.8154	6 14 25.0	13.348
17	13 26 1.99	1.8182	6 27 45.4	13.333
18	13 27 51.17	1.8211	6 41 5.0	13.318
19	13 29 40.53	1.8241	6 54 23.6	13.302
20	13 31 30.06	1.8272	7 7 41.2	13.285
21	13 33 19.78	1.8303	7 20 57.8	13.268
22	13 35 9.70	1.8335	7 34 13.4	13.250
23	13 36 59.81	1.8368	7 47 27.9	13.231
24	13 38 50.12	1.8402	S. 8 0 41.1	13.211

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 38 50.12	1.8402	S. 8 0 41.1	13.211
1	13 40 40.64	1.8437	8 13 53.1	13.190
2	13 42 31.36	1.8472	8 27 3.9	13.169
3	13 44 22.29	1.8508	8 40 13.4	13.147
4	13 46 13.45	1.8545	8 53 21.5	13.124
5	13 48 4.83	1.8583	9 6 28.2	13.099
6	13 49 56.44	1.8621	9 19 33.4	13.074
7	13 51 48.28	1.8660	9 32 37.1	13.049
8	13 53 40.36	1.8700	9 45 39.3	13.023
9	13 55 32.68	1.8741	9 58 39.9	12.995
10	13 57 25.25	1.8783	10 11 38.7	12.967
11	13 59 18.08	1.8826	10 24 35.8	12.938
12	14 1 11.16	1.8869	10 37 31.2	12.908
13	14 3 4.50	1.8913	10 50 24.8	12.877
14	14 4 58.11	1.8958	11 3 16.4	12.845
15	14 6 51.99	1.9003	11 16 6.1	12.812
16	14 8 46.14	1.9050	11 28 53.9	12.778
17	14 10 40.57	1.9097	11 41 39.6	12.743
18	14 12 35.30	1.9145	11 54 23.1	12.707
19	14 14 30.32	1.9193	12 7 4.5	12.671
20	14 16 25.62	1.9242	12 19 43.6	12.634
21	14 18 21.22	1.9293	12 32 20.5	12.595
22	14 20 17.13	1.9344	12 44 55.0	12.555
23	14 22 13.35	1.9396	S. 12 57 27.1	12.515

FRIDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 24 9.88	1.9449	S. 13 9 56.8	12.474

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	2	11	10.2
○ Full Moon, . . .	9	18	33.7
☾ Last Quarter, . .	16	8	58.3
● New Moon, . .	23	22	33.8

	d	h
☾ Perigee, ...	11	17.7
☾ Apogee, ...	27	9.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	73° 56′ 6″	3435	75° 17′ 43″	3430	76° 39′ 26″	3425	78° 1′ 14″	3421
	Regulus	W.	25 44 30	3134	27 11 58	3124	28 39 39	3114	30 7 32	3103
	Jupiter	W.	24 51 20	3186	26 17 46	3177	27 44 23	3168	29 11 11	3158
	Mars	E.	38 26 10	3184	36 59 42	3183	35 33 12	3179	34 6 38	3177
	Antares	E.	74 55 58	3069	73 27 10	3065	71 58 18	3060	70 29 20	3055
2	Sun	W.	84 51 52	3386	86 14 24	3379	87 37 5	3369	88 59 57	3360
	Regulus	W.	37 30 0	3054	38 59 6	3045	40 28 23	3034	41 57 53	3023
	Jupiter	W.	36 27 59	3112	37 55 54	3102	39 24 1	3092	40 52 20	3082
	Antares	E.	63 2 50	3026	61 33 9	3018	60 3 18	3010	58 33 18	3002
	α Aquilæ	E.	109 12 46	3946	108 0 13	3923	106 47 17	3902	105 33 59	3880
	Saturn	E.	115 20 4	3009	113 50 2	3001	112 19 50	2992	110 49 27	2983
3	Sun	W.	95 57 5	3306	97 21 9	3295	98 45 26	3282	100 9 58	3270
	Regulus	W.	49 28 47	2967	50 59 41	2955	52 30 50	2942	54 2 15	2929
	Jupiter	W.	48 17 12	3026	49 46 52	3014	51 16 47	3001	52 46 58	2989
	Antares	E.	51 0 32	2954	49 29 22	2943	47 57 58	2933	46 26 21	2921
	α Aquilæ	E.	99 22 9	3781	98 6 47	3765	96 51 8	3747	95 35 11	3730
	Saturn	E.	103 14 36	2932	101 42 58	2921	100 11 6	2909	98 38 59	2896
4	Sun	W.	107 16 35	3198	108 42 46	3184	110 9 14	3169	111 36 0	3153
	Regulus	W.	61 43 34	2860	63 16 44	2845	64 50 13	2831	66 24 1	2815
	Jupiter	W.	60 22 3	2919	61 53 58	2905	63 26 11	2889	64 58 44	2874
	Antares	E.	38 44 29	2860	37 11 19	2847	35 37 52	2834	34 4 8	2821
	α Aquilæ	E.	89 11 17	3658	87 53 45	3646	86 36 0	3634	85 18 2	3622
	Saturn	E.	90 54 23	2831	89 20 36	2817	87 46 30	2803	86 12 6	2788
5	Sun	W.	118 54 47	3060	120 23 34	3052	121 52 42	3035	123 22 11	3018
	Regulus	W.	74 18 9	2735	75 54 2	2718	77 30 18	2701	79 6 56	2685
	Jupiter	W.	72 46 31	2793	74 21 8	2776	75 56 7	2760	77 31 28	2742
	Saturn	E.	78 15 6	2710	76 38 39	2694	75 1 51	2678	73 24 41	2661
	α Aquilæ	E.	78 45 25	3579	77 26 28	3573	76 7 24	3569	74 48 16	3566
	Fomalhaut	E.	108 41 33	2912	107 9 29	2891	105 36 59	2872	104 4 4	2852
6	Regulus	W.	87 15 50	2596	88 54 48	2581	90 34 9	2563	92 13 55	2545
	Jupiter	W.	85 33 59	2655	87 11 39	2637	88 49 44	2620	90 28 12	2601
	Spica	W.	33 17 40	2630	34 55 54	2609	36 34 37	2588	38 13 48	2568
	Mars	W.	22 16 30	2735	23 52 23	2714	25 28 44	2692	27 5 34	2671
	Saturn	E.	65 13 13	2577	63 33 46	2560	61 53 56	2543	60 13 43	2526
	α Aquilæ	E.	68 12 17	3574	66 53 14	3582	65 34 20	3591	64 15 36	3604
	Fomalhaut	E.	96 13 18	2759	94 37 56	2740	93 2 9	2722	91 25 58	2704
7	Regulus	W.	100 38 45	2460	102 20 55	2443	104 3 29	2426	105 46 27	2410
	Jupiter	W.	98 46 37	2515	100 27 30	2497	102 8 47	2480	103 50 28	2464
	Spica	W.	46 36 36	2471	48 18 30	2453	50 0 49	2435	51 43 34	2417
	Mars	W.	35 16 43	2572	36 56 17	2553	38 36 16	2535	40 16 40	2517
	Saturn	E.	51 46 47	2444	50 4 15	2428	48 21 20	2412	46 38 3	2397
	α Aquilæ	E.	57 46 26	3716	56 29 56	3750	55 14 2	3791	53 58 50	3838
	Fomalhaut	E.	83 19 19	2621	81 40 53	2605	80 2 5	2591	78 22 57	2577
	α Pegasi	E.	102 44 22	2852	101 11 2	2830	99 37 13	2809	98 2 57	2789
8	Spica	W.	60 23 33	2333	62 8 44	2317	63 54 18	2302	65 40 14	2287
	Mars	W.	48 44 46	2433	50 27 34	2417	52 10 44	2402	53 54 16	2387
	Saturn	E.	37 56 22	2328	36 11 3	2316	34 25 27	2305	32 39 35	2295
	Fomalhaut	E.	70 2 37	2514	68 21 43	2504	66 40 36	2494	64 59 15	2487

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	79 23 7	3415	80 45 7	3408	82 7 14	3401	83 29 29	3394
	Regulus	W.	31 35 38	3093	33 3 56	3084	34 32 25	3074	36 1 6	3064
	Jupiter	W.	30 38 11	3149	32 5 21	3139	33 32 43	3131	35 0 15	3121
	Mars	E.	32 40 1	3173	31 13 20	3170	29 46 35	3167	28 19 46	3163
	Antares	E.	69 0 15	3050	67 31 4	3045	66 1 47	3039	64 32 23	3032
2	Sun	W.	90 22 59	3351	91 46 12	3340	93 9 37	3330	94 33 14	3318
	Regulus	W.	43 27 37	3013	44 57 34	3002	46 27 44	2991	47 58 8	2979
	Jupiter	W.	42 20 52	3071	43 49 37	3060	45 18 35	3050	46 47 46	3038
	Antares	E.	57 3 8	2993	55 32 47	2984	54 2 14	2974	52 31 29	2965
	α Aquilæ	E.	104 20 19	3858	103 6 17	3839	101 51 55	3819	100 37 12	3799
	Saturn	E.	109 18 53	2974	107 48 8	2964	106 17 10	2954	104 46 0	2943
3	Sun	W.	101 34 45	3256	102 59 48	3242	104 25 7	229	105 50 42	3214
	Regulus	W.	55 33 57	2916	57 5 55	2903	58 38 10	2889	60 10 43	2875
	Jupiter	W.	54 17 25	2976	55 48 8	2962	57 19 9	2948	58 50 27	2934
	Antares	E.	44 54 29	2909	43 22 22	2898	41 50 0	2886	40 17 23	2873
	α Aquilæ	E.	94 18 56	3714	93 2 24	3700	91 45 37	3685	90 28 34	3672
	Saturn	E.	97 6 37	2885	95 33 59	2872	94 1 4	2859	92 27 52	2845
4	Sun	W.	113 3 6	3137	114 30 31	3120	115 58 16	3104	117 26 21	3087
	Regulus	W.	67 58 9	2799	69 32 38	2784	71 7 27	2768	72 42 37	2751
	Jupiter	W.	66 31 36	2858	68 4 49	2842	69 38 22	2826	71 12 16	2810
	Antares	E.	32 30 7	2808	30 55 49	2795	29 21 14	2782	27 46 22	2770
	α Aquilæ	E.	83 59 51	3611	82 41 29	3602	81 22 57	3593	80 4 15	3586
	Saturn	E.	84 37 22	2773	83 2 19	2757	81 26 55	2742	79 51 11	2726
5	Sun	W.	124 52 2	3000	126 22 15	2982	127 52 50	2965	129 23 47	2947
	Regulus	W.	80 43 56	2668	82 21 19	2650	83 59 6	2633	85 37 16	2615
	Jupiter	W.	79 7 12	2725	80 43 19	2707	82 19 49	2690	83 56 42	2672
	Saturn	E.	71 47 9	2644	70 9 14	2628	68 30 57	2611	66 52 17	2593
	α Aquilæ	E.	73 29 5	3565	72 9 52	3564	70 50 38	3565	69 31 26	3568
	Fomalhaut	E.	102 30 44	2833	100 56 59	2815	99 22 50	2795	97 48 16	2777
6	Regulus	W.	93 54 5	2528	95 34 39	2511	97 15 37	2494	98 56 59	2477
	Jupiter	W.	92 7 5	2584	93 46 22	2566	95 26 3	2549	97 6 8	2532
	Spica	W.	39 53 27	2548	41 33 34	2528	43 14 8	2509	44 55 9	2490
	Mars	W.	28 42 53	2650	30 20 40	2630	31 58 54	2610	33 37 35	2591
	Saturn	E.	58 33 6	2510	56 52 6	2493	55 10 43	2476	53 28 56	2460
	α Aquilæ	E.	62 57 6	3620	61 38 53	3637	60 20 59	3659	59 3 28	3686
	Fomalhaut	E.	89 49 24	2687	88 12 26	2670	86 35 6	2653	84 57 23	2638
7	Regulus	W.	107 29 48	2393	109 13 33	2378	110 57 40	2362	112 42 10	2347
	Jupiter	W.	105 32 32	2447	107 15 0	2431	108 57 50	2415	110 41 3	2399
	Spica	W.	53 26 45	2399	55 10 21	2382	56 54 21	2366	58 38 45	2349
	Mars	W.	41 57 29	2499	43 38 43	2483	45 20 20	2466	47 2 21	2449
	Saturn	E.	44 54 24	2382	43 10 24	2368	41 26 3	2354	39 41 22	2341
	α Aquilæ	E.	52 44 27	3891	51 30 58	3949	50 18 28	4017	49 7 5	4097
	Fomalhaut	E.	76 43 30	2562	75 3 43	2549	73 23 38	2537	71 43 16	2525
	α Pegasi	E.	96 28 15	2770	94 53 8	2751	93 17 36	2735	91 41 42	2718
8	Spica	W.	67 26 33	2272	69 13 13	2259	71 0 13	2245	72 47 33	2233
	Mars	W.	55 38 9	2373	57 22 23	2359	59 6 57	2345	69 51 51	2333
	Saturn	E.	30 53 28	2286	29 7 8	2279	27 20 38	2274	25 34 0	2270
	Fomalhaut	E.	63 17 43	2480	61 36 1	2474	59 54 11	2469	58 12 14	2466

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	α Pegasi	E.	90° 5′ 26″	2702	88° 28′ 49″	2688	86° 51′ 53″	2675	85° 14′ 39″	2662
9	Spica	W.	74 35 12	2220	76 23 10	2208	78 11 25	2197	79 59 57	2186
	Mars	W.	62 37 3	2320	64 22 33	2308	66 8 21	2296	67 54 26	2286
	Antares	W.	28 41 53	2233	30 29 32	2218	32 17 32	2205	34 5 52	2192
	Fomalhaut	E.	56 30 13	2465	54 48 10	2465	53 6 7	2467	51 24 7	2472
	α Pegasi	E.	77 4 48	2618	75 26 17	2613	73 47 40	2610	72 8 58	2607
10	Spica	W.	89 6 27	2141	90 56 24	2134	92 46 32	2127	94 36 50	2121
	Mars	W.	76 48 29	2241	78 35 56	2233	80 23 34	2227	82 11 22	2221
	Antares	W.	43 11 57	2141	45 1 54	2132	46 52 4	2125	48 42 25	2118
	α Pegasi	E.	63 55 36	2626	62 17 16	2635	60 39 9	2648	59 1 19	2663
	α Arietis	E.	105 3 55	2218	103 15 55	2210	101 27 42	2202	99 39 18	2195
11	Mars	W.	91 12 14	2201	93 0 40	2199	94 49 9	2198	96 37 40	2196
	Antares	W.	57 56 22	2096	59 47 28	2092	61 38 39	2090	63 29 53	2090
	α Pegasi	E.	50 58 36	2789	49 23 54	2827	47 50 1	2870	46 17 4	2920
	α Arietis	E.	90 35 3	2172	88 45 54	2170	86 56 41	2169	85 7 26	2169
	Venus	E.	116 56 41	2382	115 12 41	2378	113 28 35	2377	111 44 27	2377
12	Antares	W.	72 46 10	2092	74 37 21	2095	76 28 28	2098	78 19 31	2101
	Saturn	W.	21 26 58	2153	23 16 36	2144	25 6 28	2137	26 56 31	2132
	α Arietis	E.	76 1 25	2178	74 12 24	2181	72 23 28	2186	70 34 40	2193
	Venus	E.	103 3 50	2382	101 19 49	2384	99 35 52	2388	97 52 0	2392
	Aldebaran	E.	106 17 51	2118	104 27 19	2120	102 36 51	2123	100 46 27	2126
13	Antares	W.	87 33 5	2128	89 23 22	2134	91 13 30	2141	93 3 27	2148
	α Aquilæ	W.	48 35 47	3830	49 50 18	3746	51 6 17	3669	52 23 37	3601
	Saturn	W.	36 7 34	2134	37 57 41	2138	39 47 42	2143	41 37 36	2149
	α Arietis	E.	61 33 19	2234	59 45 42	2245	57 58 22	2258	56 11 20	2270
	Venus	E.	89 14 28	2422	87 31 25	2430	85 48 33	2438	84 5 52	2445
	Aldebaran	E.	91 36 0	2152	89 46 20	2158	87 56 49	2165	86 7 29	2173
14	α Aquilæ	W.	59 6 15	3363	60 29 14	3330	61 52 51	3301	63 17 1	3277
	Saturn	W.	50 44 45	2184	52 33 37	2192	54 22 16	2201	56 10 42	2210
	α Arietis	E.	47 21 21	2351	45 36 36	2371	43 52 20	2393	42 8 35	2417
	Venus	E.	75 35 37	2495	73 54 17	2506	72 13 12	2517	70 32 23	2529
	Aldebaran	E.	77 3 56	2218	75 15 55	2228	73 28 9	2239	71 40 39	2249
	Sun	E.	121 19 4	2497	119 37 46	2507	117 56 43	2517	116 15 54	2527
15	α Aquilæ	W.	70 23 42	3202	71 49 49	3194	73 16 5	3188	74 42 28	3185
	Saturn	W.	65 9 13	2262	66 56 9	2272	68 42 49	2284	70 29 12	2295
	Fomalhaut	W.	36 25 25	2782	38 0 17	2754	39 35 45	2732	41 11 43	2713
	Venus	E.	62 12 28	2591	60 33 21	2605	58 54 33	2618	57 16 3	2632
	Aldebaran	E.	62 47 18	2309	61 1 31	2322	59 16 3	2335	57 30 54	2348
	Sun	E.	107 55 35	2585	106 16 19	2596	104 37 19	2609	102 58 36	2621
16	α Aquilæ	W.	81 54 42	3193	83 20 59	3199	84 47 9	3207	86 13 10	3216
	Saturn	W.	79 17 0	2353	81 1 43	2365	82 46 8	2376	84 30 17	2389
	Fomalhaut	W.	49 16 12	2667	50 53 36	2664	52 31 4	2663	54 8 33	2663
	α Pegasi	W.	34 52 41	3796	36 7 47	3693	37 24 42	3603	38 43 13	3525
	Aldebaran	E.	48 50 6	2419	47 6 59	2435	45 24 14	2450	43 41 51	2466
	Venus	E.	49 8 15	2703	47 31 39	2718	45 55 23	2733	44 19 27	2749
	Sun	E.	94 49 16	2684	93 12 15	2696	91 35 32	2710	89 59 6	2724

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV$^{\text{h}}$.	P. L. of Diff.	XVIII$^{\text{h}}$.	P. L. of Diff.	XXI$^{\text{h}}$.	P. L. of Diff.
8	α Pegasi	E.	83° 37′ 8″	2651	81° 59′ 22″	2640	80° 21′ 22″	2632	78° 43′ 10″	2624
9	Spica	W.	81 48 46	2176	83 37 50	2166	85 27 9	2157	87 16 42	2149
	Mars	W.	69 40 46	2276	71 27 21	2266	73 14 11	2257	75 1 14	2249
	Antares	W.	35 54 32	2180	37 43 30	2169	39 32 44	2159	41 22 13	2149
	Fomalhaut	E.	49 42 14	2478	48 0 30	2487	46 18 58	2499	44 37 43	2515
	α Pegasi	E.	70 30 13	2607	68 51 28	2609	67 12 45	2612	65 34 7	2618
10	Spica	W.	96 27 17	2116	98 17 52	2111	100 8 35	2107	101 59 24	2104
	Mars	W.	83 59 18	2216	85 47 22	2210	87 35 34	2206	89 23 52	2204
	Antares	W.	50 32 56	2113	52 23 36	2107	54 14 25	2102	56 5 21	2099
	α Pegasi	E.	57 23 49	2681	55 46 43	2702	54 10 6	2727	52 34 2	2756
	α Arietis	E.	97 50 43	2189	96 1 59	2184	94 13 7	2179	92 24 8	2175
11	Mars	W.	98 26 13	2196	100 14 46	2198	102 3 17	2198	103 51 47	2200
	Antares	W.	65 21 8	2089	67 12 24	2088	69 3 41	2089	70 54 57	2091
	α Pegasi	E.	44 45 10	2977	43 14 28	3041	41 45 6	3115	40 17 15	3199
	α Arietis	E.	83 18 11	2169	81 28 56	2169	79 39 42	2171	77 50 31	2174
	Venus	E.	110 0 19	2376	108 16 10	2377	106 32 2	2378	104 47 55	2379
12	Antares	W.	80 10 28	2105	82 1 19	2111	83 52 2	2115	85 42 38	2121
	Saturn	W.	28 46 41	2130	30 36 54	2129	32 27 9	2130	34 17 23	2132
	α Arietis	E.	68 46 2	2200	66 57 34	2206	65 9 16	2215	63 21 11	2224
	Venus	E.	96 8 14	2397	94 24 35	2403	92 41 4	2408	90 57 41	2415
	Aldebaran	E.	98 56 8	2130	97 5 55	2135	95 15 49	2139	93 25 50	2145
13	Antares	W.	94 53 13	2156	96 42 47	2165	98 32 8	2173	100 21 16	2183
	α Aquilæ	W.	53 42 10	3541	55 1 49	3488	56 22 27	3440	57 43 58	3400
	Saturn	W.	43 27 21	2154	45 16 58	2161	47 6 25	2168	48 55 41	2176
	α Arietis	E.	54 24 36	2284	52 38 13	2298	50 52 11	2315	49 6 33	2333
	Venus	E.	82 23 22	2455	80 41 5	2465	78 59 2	2474	77 17 12	2485
	Aldebaran	E.	84 18 21	2181	82 29 25	2190	80 40 42	2198	78 52 12	2208
14	α Aquilæ	W.	64 41 39	3256	66 6 42	3239	67 32 5	3224	68 57 46	3211
	Saturn	W.	57 58 54	2220	59 46 51	2230	61 34 34	2241	63 22 1	2251
	α Arietis	E.	40 25 24	2443	38 42 50	2471	37 0 56	2502	35 19 46	2537
	Venus	E.	68 51 50	2541	67 11 34	2553	65 31 35	2566	63 51 53	2578
	Aldebaran	E.	69 53 24	2260	68 6 26	2272	66 19 46	2284	64 33 23	2296
	SUN	E.	114 35 19	2539	112 55 0	2550	111 14 56	2561	109 35 8	2572
15	α Aquilæ	W.	76 8 55	3183	77 35 24	3183	79 1 53	3185	80 28 20	3189
	Saturn	W.	72 15 19	2307	74 1 9	2317	75 46 43	2329	77 32 0	2341
	Fomalhaut	W.	42 48 5	2698	44 24 47	2687	46 1 45	2678	47 38 54	2672
	Venus	E.	55 37 51	2646	53 59 58	2660	52 22 25	2675	50 45 11	2688
	Aldebaran	E.	55 46 4	2362	54 1 34	2375	52 17 24	2390	50 33 35	2404
	SUN	E.	101 20 10	2634	99 42 1	2646	98 4 9	2659	96 26 34	2672
16	α Aquilæ	W.	87 39 0	3225	89 4 39	3237	90 30 4	3250	91 55 14	3263
	Saturn	W.	86 14 8	2401	87 57 42	2412	89 40 59	2424	91 23 59	2436
	Fomalhaut	W.	55 46 2	2665	57 23 29	2668	59 0 52	2671	60 38 11	2675
	α Pegasi	W.	40 3 9	3459	41 24 19	3401	42 46 34	3351	44 9 46	3309
	Aldebaran	E.	41 59 50	2483	40 18 13	2501	38 37 1	2519	36 56 14	2538
	Venus	E.	42 43 52	2764	41 8 37	2780	39 33 43	2796	37 59 10	2812
	SUN	E.	88 22 58	2737	86 47 7	2750	85 11 33	2763	83 36 16	2776

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	α Aquilæ	W.	93° 20′ 9″	3277	94° 44′ 47″	3294	96° 9′ 5″	3312	97° 33′ 3″	3329
	Saturn	W.	93 6 43	2448	94 49 9	2460	96 31 19	2472	98 13 12	2484
	Fomalhaut	W.	62 15 24	2680	63 52 31	2686	65 29 30	2692	67 6 21	2698
	α Pegasi	W.	45 33 47	3271	46 58 32	3239	48 23 55	3211	49 49 51	3188
	Venus	E.	36 24 58	2829	34 51 8	2846	33 17 40	2864	31 44 35	2882
	Sun	E.	82 1 17	2789	80 26 35	2801	78 52 9	2815	77 18 0	2828
18	Saturn	W.	106 38 30	2542	108 18 45	2553	109 58 45	2564	111 38 29	2575
	Fomalhaut	W.	75 8 13	2737	76 44 4	2746	78 19 43	2755	79 55 10	2764
	α Pegasi	W.	57 5 23	3112	58 33 18	3104	60 1 23	3097	61 29 36	3091
	Sun	E.	69 31 27	2891	67 58 57	2904	66 26 43	2916	64 54 45	2929
19	Fomalhaut	W.	87 49 20	2813	89 23 31	2824	90 57 28	2834	92 31 12	2845
	α Pegasi	W.	68 51 47	3084	70 20 16	3085	71 48 44	3087	73 17 10	3090
	Sun	E.	57 18 47	2989	55 48 21	3001	54 18 10	3014	52 48 14	3026
20	Fomalhaut	W.	100 16 25	2899	101 48 45	2911	103 20 50	2923	104 52 40	2935
	α Pegasi	W.	80 38 10	3114	82 6 3	3119	83 33 49	3126	85 1 27	3133
	Sun	E.	45 22 13	3084	43 53 44	3096	42 25 30	3108	40 57 30	3120
21	α Pegasi	W.	92 17 13	3177	93 43 50	3186	95 10 16	3196	96 36 30	3208
	Sun	E.	33 41 12	3183	32 14 42	3197	30 48 29	3210	29 22 32	3225
26	Sun	W.	23 20 47	3510	24 41 0	3505	26 1 19	3500	27 21 43	3497
	Spica	E.	56 7 55	3072	54 39 11	3077	53 10 33	3081	51 42 0	3086
	Mars	E.	74 58 7	3231	73 32 34	3235	72 7 6	3239	70 41 43	3242
	Antares	E.	101 59 29	3059	100 30 29	3063	99 1 34	3066	97 32 43	3070
27	Sun	W.	34 4 18	3489	35 24 54	3488	36 45 31	3488	38 6 9	3487
	Spica	E.	44 20 28	3104	42 52 23	3106	41 24 21	3110	39 56 23	3113
	Mars	E.	63 35 46	3257	62 10 44	3259	60 45 45	3261	59 20 48	3263
	Antares	E.	90 9 23	3082	88 40 51	3083	87 12 21	3085	85 43 53	3086
28	Sun	W.	44 49 41	3479	46 10 29	3476	47 31 20	3474	48 52 13	3471
	Mars	E.	52 16 23	3265	50 51 31	3265	49 26 39	3265	48 1 46	3264
	Antares	E.	78 21 45	3087	76 53 19	3087	75 24 53	3086	73 56 26	3085
29	Sun	W.	55 37 30	3454	56 58 46	3448	58 20 8	3443	59 41 36	3438
	Jupiter	W.	27 49 4	3184	29 15 32	3177	30 42 9	3169	32 8 55	3161
	Mars	E.	40 56 55	3253	39 31 48	3250	38 6 38	3247	36 41 24	3244
	Antares	E.	66 33 32	3072	65 4 48	3068	63 35 59	3064	62 7 5	3059
	α Aquilæ	E.	112 10 20	4037	110 59 17	4016	109 47 53	3995	108 36 8	3973
	Saturn	E.	116 55 35	3053	115 26 28	3048	113 57 15	3044	112 27 57	3039
30	Sun	W.	66 30 37	3404	67 52 49	3396	69 15 10	3387	70 37 41	3379
	Jupiter	W.	39 25 6	3122	40 52 49	3113	42 20 43	3105	43 48 47	3095
	Antares	E.	54 41 3	3031	53 11 29	3025	51 41 47	3018	50 11 57	3010
	α Aquilæ	E.	102 32 25	3881	101 18 46	3865	100 4 51	3850	98 50 40	3836
	Saturn	E.	104 59 45	3009	103 29 43	3002	101 59 33	2994	100 29 13	2987
31	Sun	W.	77 32 57	3328	78 56 36	3316	80 20 29	3304	81 44 36	3292
	Jupiter	W.	51 12 6	3044	52 41 24	3033	54 10 56	3021	55 40 43	3009
	Antares	E.	42 40 14	2967	41 9 20	2958	39 38 14	2947	38 6 55	2938
	α Aquilæ	E.	92 36 12	3769	91 20 38	3759	90 4 53	3747	88 48 56	3737
	Saturn	E.	92 54 54	2940	91 23 26	2930	89 51 45	2919	88 19 50	2908

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	α Aquilæ	W.	98° 56′ 41″	3348	100° 19′ 57″	3370	101° 42′ 48″	3392	103° 5′ 14″	3415
	Saturn	W.	99 54 48	2495	101 36 8	2507	103 17 11	2519	104 57 58	2530
	Fomalhaut	W.	68 43 3	2705	70 19 36	2713	71 55 59	2721	73 32 11	2729
	α Pegasi	W.	51 16 15	3167	52 43 4	3150	54 10 13	3135	55 37 40	3122
	Venus	E.	30 11 53	2901	28 39 36	2922	27 7 45	2943	25 36 21	2965
	Sun	E.	75 44 9	2841	74 10 34	2853	72 37 15	2866	71 4 13	2879
18	Saturn	W.	113 17 58	2587	114 57 11	2598	116 36 9	2609	118 14 52	2621
	Fomalhaut	W.	81 30 25	2773	83 5 28	2783	84 40 18	2792	86 14 56	2803
	α Pegasi	W.	62 57 56	3087	64 26 21	3086	65 54 48	3084	67 23 17	3083
	Sun	E.	63 23 3	2941	61 51 36	2953	60 20 24	2965	58 49 28	2977
19	Fomalhaut	W.	94 4 42	2855	95 37 59	2866	97 11 2	2876	98 43 51	2888
	α Pegasi	W.	74 45 32	3093	76 13 50	3097	77 42 3	3102	79 10 10	3108
	Sun	E.	51 18 33	3037	49 49 6	3049	48 19 54	3060	46 50 56	3073
20	Fomalhaut	W.	106 24 15	2947	107 55 34	2959	109 26 38	2972	110 57 26	2985
	α Pegasi	W.	86 28 56	3142	87 56 15	3149	89 23 25	3158	90 50 25	3168
	Sun	E.	39 29 45	3132	38 2 14	3144	36 34 58	3157	35 7 57	3170
21	α Pegasi	W.	98 2 30	3219	99 28 17	3231	100 53 50	3243	102 19 8	3255
	Sun	E.	27 56 53	3241	26 31 32	3257	25 6 30	3275	23 41 49	3294
26	Sun	W.	28 42 10	3495	30 2 40	3494	31 23 11	3492	32 43 44	3491
	Spica	E.	50 13 33	3089	48 45 10	3093	47 16 52	3096	45 48 38	3100
	Mars	E.	69 16 24	3246	67 51 9	3249	66 25 58	3253	65 0 51	3254
	Antares	E.	96 3 57	3073	94 35 14	3075	93 6 34	3078	91 37 57	3080
27	Sun	W.	39 26 48	3485	40 47 29	3484	42 8 11	3482	43 28 55	3480
	Spica	E.	38 28 29	3116	37 0 39	3119	35 32 52	3122	34 5 9	3124
	Mars	E.	57 55 53	3265	56 31 6	3265	55 6 7	3265	53 41 15	3265
	Antares	E.	84 15 26	3087	82 47 0	3087	81 18 35	3087	79 50 10	3087
28	Sun	W.	50 13 9	3469	51 34 8	3465	52 55 11	3462	54 16 18	3457
	Mars	E.	46 36 52	3262	45 11 56	3260	43 46 58	3259	42 21 58	3256
	Antares	E.	72 27 56	3082	70 59 24	3080	69 30 50	3078	68 2 13	3074
29	Sun	W.	61 3 10	3431	62 24 51	3426	63 46 38	3419	65 8 33	3411
	Jupiter	W.	33 35 51	3154	35 2 55	3146	36 30 9	3138	37 57 33	3130
	Mars	E.	35 16 5	3238	33 50 41	3234	32 25 12	3229	30 59 37	3224
	Antares	E.	60 38 5	3055	59 9 0	3049	57 39 48	3043	56 10 29	3038
	α Aquilæ	E.	107 24 2	3953	106 11 36	3934	104 58 51	3916	103 45 47	3898
	Saturn	E.	110 58 32	3034	109 29 1	3028	107 59 23	3022	106 29 38	3016
30	Sun	W.	72 0 22	3370	73 23 13	3359	74 46 16	3350	76 9 30	3338
	Jupiter	W.	45 17 3	3086	46 45 30	3076	48 14 9	3065	49 43 1	3055
	Antares	E.	48 41 57	3002	47 11 47	2994	45 41 27	2985	44 10 56	2977
	α Aquilæ	E.	97 36 15	3821	96 21 35	3806	95 6 41	3794	93 51 33	3782
	Saturn	E.	98 58 44	2978	97 28 4	2969	95 57 12	2960	94 26 9	2950
31	Sun	W.	83 8 57	3279	84 33 33	3265	85 58 25	3252	87 23 33	3238
	Jupiter	W.	57 10 45	2997	58 41 2	2984	60 11 35	2970	61 42 25	2957
	Antares	E.	36 35 24	2927	35 3 40	2916	33 31 41	2905	31 59 28	2894
	α Aquilæ	E.	87 32 48	3727	86 16 29	3718	85 0 1	3709	83 43 23	3701
	Saturn	E.	86 47 41	2896	85 15 17	2883	83 42 37	2872	82 9 42	2859

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	8 46 42.43	9.704	N.17 57 27.6	38.01	15 48.11	66.63	6 2.45	0.152
Sat.	2	8 50 35.01	9.678	17 42 6.8	38.73	15 48.25	66.54	5 58.48	0.178
Sun.	3	8 54 26.97	9.652	17 26 28.6	39.44	15 48.39	66.45	5 53.90	0.204
Mon.	4	8 58 18.30	9.626	17 10 33.4	40.14	15 48.54	66.36	5 48.67	0.230
Tues.	5	9 2 9.01	9.601	16 54 21.6	40.84	15 48.68	66.27	5 42.83	0.255
Wed.	6	9 5 59.11	9.576	16 37 53.6	41.51	15 48.83	66.19	5 36.41	0.280
Thur.	7	9 9 48.61	9.550	16 21 9.5	42.17	15 48.98	66.10	5 29.38	0.305
Frid.	8	9 13 37.53	9.526	16 4 9.7	42.83	15 49.14	66.02	5 21.76	0.329
Sat.	9	9 17 25.87	9.502	15 46 54.4	43.46	15 49.30	65.93	5 13.57	0.353
Sun.	10	9 21 13.63	9.478	15 29 23.9	44.08	15 49.46	65.85	5 4.80	0.377
Mon.	11	9 25 0.82	9.455	15 11 38.6	44.70	15 49.62	65.77	4 55.46	0.400
Tues.	12	9 28 47.46	9.432	14 53 38.7	45.31	15 49.79	65.69	4 45.57	0.423
Wed.	13	9 32 33.56	9.410	14 35 24.4	45.90	15 49.96	65.61	4 35.15	0.445
Thur.	14	9 36 19.14	9.387	14 16 56.1	46.47	15 50.13	65.53	4 24.20	0.468
Frid.	15	9 40 4.21	9.366	13 58 14.0	47.04	15 50.30	65.45	4 12.74	0.489
Sat.	16	9 43 48.77	9.345	13 39 18.5	47.59	15 50.48	65.38	4 0.78	0.510
Sun.	17	9 47 32.82	9.325	13 20 9.9	48.13	15 50 66	65.30	3 48.30	0.530
Mon.	18	9 51 16.36	9.305	13 0 48.4	48.65	15 50.84	65.23	3 35.33	0.550
Tues.	19	9 54 59.42	9.285	12 41 14.6	49.16	15 51.03	65.15	3 21.87	0.570
Wed.	20	9 58 42.03	9.266	12 21 28.5	49.67	15 51.22	65.08	3 7.96	0.589
Thur.	21	10 2 24.18	9.247	12 1 30.5	50.15	15 51.42	65.01	2 53.59	0.608
Frid.	22	10 6 5.88	9.227	11 41 21.0	50.62	15 51.62	64.95	2 38.78	0.627
Sat.	23	10 9 47.13	9.209	11 21 0.5	51.09	15 51.82	64.88	2 23.51	0.645
Sun.	24	10 13 27.93	9.191	11 0 29.1	51.53	15 52.03	64.82	2 7.80	0.663
Mon.	25	10 17 8.31	9.174	10 39 47.1	51.96	15 52.24	64.76	1 51.67	0.680
Tues.	26	10 20 48.28	9.157	10 18 54.9	52.37	15 52.46	64.71	1 35.13	0.697
Wed.	27	10 24 27.85	9.140	9 57 53.0	52.78	15 52.68	64.65	1 18.20	0.714
Thur.	28	10 28 7.04	9.125	9 36 41.8	53.16	15 52.91	64.60	1 0.88	0.729
Frid.	29	10 31 45.86	9.110	9 15 21.4	53.53	15 53.14	64.55	0 43.20	0.744
Sat.	30	10 35 24.32	9.095	8 53 52.1	53.90	15 53.37	64.50	0 25.16	0.759
Sun.	31	10 39 2.43	9.081	8 32 14.4	54.25	15 53.60	64.45	0 6.76	0.773
Mon.	32	10 42 40.22	9.068	N. 8 10 28.5	54.58	15 53.84	64.41	0 11.96	0.786

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subtracted from* / *added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	8 46 41.45	9.704	N.17 57 31.4	38.01	6 2.47	0.152	8 40 38.98
Sat.	2	8 50 34.04	9.678	17 42 10.6	38.73	5 58.50	0.178	8 44 35.54
Sun.	3	8 54 26.01	9.652	17 26 32.5	39.44	5 53.92	0.204	8 48 32.09
Mon.	4	8 58 17.34	9.626	17 10 37.3	40.14	5 48.69	0.230	8 52 28.65
Tues.	5	9 2 8.07	9.601	16 54 25.5	40.84	5 42.86	0.255	8 56 25.21
Wed.	6	9 5 58.20	9.576	16 37 57.5	41.51	5 36.44	0.280	9 0 21.76
Thur.	7	9 9 47.73	9.551	16 21 13.4	42.17	5 29.41	0.305	9 4 18.32
Frid.	8	9 13 36.67	9.527	16 4 13.5	42.83	5 21.79	0.329	9 8 14.88
Sat.	9	9 17 25.03	9.503	15 46 58.2	43.46	5 13.60	0.353	9 12 11.43
Sun.	10	9 21 12.81	9.479	15 29 27.7	44.08	5 4.82	0.377	9 16 7.99
Mon.	11	9 25 0.03	9.456	15 11 42.3	44.70	4 55.49	0.400	9 20 4.54
Tues.	12	9 28 46.70	9.433	14 53 42.3	45.31	4 45.60	0.423	9 24 1.10
Wed.	13	9 32 32.83	9.411	14 35 27.9	45.90	4 35.18	0.445	9 27 57.65
Thur.	14	9 36 18.44	9.388	14 16 59.5	46.47	4 24.23	0.468	9 31 54.21
Frid.	15	9 40 3.54	9.367	13 58 17.4	47.04	4 12.77	0.489	9 35 50.77
Sat.	16	9 43 48.13	9.346	13 39 21.8	47.59	4 0.81	0.510	9 39 47.32
Sun.	17	9 47 32.21	9.326	13 20 13.0	48.14	3 48.33	0.530	9 43 43.88
Mon.	18	9 51 15.79	9.306	13 0 51.4	48.66	3 35.36	0.550	9 47 40.43
Tues.	19	9 54 58.89	9.286	12 41 17.4	49.17	3 21.90	0.570	9 51 36.99
Wed.	20	9 58 41.53	9.267	12 21 31.1	49.68	3 7.99	0.589	9 55 33.54
Thur.	21	10 2 23.72	9.248	12 1 33.0	50.16	2 53.62	0.608	9 59 30.10
Frid.	22	10 6 5.46	9.229	11 41 23.3	50.63	2 38.81	0.627	10 3 26.65
Sat.	23	10 9 46.75	9.211	11 21 2.6	51.10	2 23.54	0.645	10 7 23.21
Sun.	24	10 13 27.59	9.193	11 0 31.0	51.54	2 7.83	0.663	10 11 19.76
Mon.	25	10 17 8.01	9.176	10 39 48.8	51.97	1 51.70	0.680	10 15 16.31
Tues.	26	10 20 48.02	9.159	10 18 56.4	52.38	1 35.15	0.697	10 19 12.87
Wed.	27	10 24 27 61	9.142	9 57 54.3	52.79	1 18.22	0.714	10 23 9.42
Thur.	28	10 28 6.87	9.127	9 36 42.8	53.17	1 0.89	0.729	10 27 5.98
Frid.	29	10 31 45.74	9.112	9 15 22.1	53.54	0 43.21	0.744	10 31 2.53
Sat.	30	10 35 24.25	9.097	8 53 52.6	53.91	0 25.16	0.759	10 34 59.09
Sun.	31	10 39 2.40	9.083	8 32 14.7	54.26	0 6.76	0.773	10 38 55.64
Mon.	32	10 42 40.23	9.070	N. 8 10 28.5	54.59	0 11.96	0.786	10 42 52.19

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. $+9^s.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE.		THE SUN'S Diff. for 1 hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	213	129 14 20.2	14 2.6	143.58	−0.08	0.0063125	−25.8	15 16 50.40
2	214	130 11 46.7	11 29.0	143.61	0.21	.0062497	26.5	15 12 54.49
3	215	131 9 13.9	8 56.1	143.64	0.34	.0061852	27.2	15 8 58.57
4	216	132 6 41.9	6 23.9	143.68	0.45	.0061192	27.8	15 5 2.66
5	217	133 4 10.7	3 52.5	143.71	0.56	.0060518	28.3	15 1 6.75
6	218	134 1 40.3	1 21.9	143.75	0.63	.0059833	28.8	14 57 10.84
7	219	134 59 10.9	58 52.4	143.79	0.68	.0059136	29.3	14 53 14.93
8	220	135 56 42.5	56 24.0	143.84	0.69	.0058427	29.7	14 49 19.02
9	221	136 54 15.2	53 56.5	143.89	0.68	.0057707	30.2	14 45 23.11
10	222	137 51 49.1	51 30.2	143.95	0.64	.0056977	30.6	14 41 27.20
11	223	138 49 24.5	49 5.5	144.00	0.57	.0056236	31.1	14 37 31.29
12	224	139 47 0.8	46 41.7	144.06	0.48	.0055483	31.6	14 33 35.38
13	225	140 44 38.9	44 19.7	144.12	0.36	.0054717	32.1	14 29 39.47
14	226	141 42 18.6	41 59.2	144.19	0.24	.0053938	32.7	14 25 43.56
15	227	142 39 59.8	39 40.2	144.25	−0.11	.0053145	33.3	14 21 47.65
16	228	143 37 42.6	37 22.9	144.32	+0.03	.0052338	33.9	14 17 51.74
17	229	144 35 27.0	35 7.2	144.38	0.16	.0051516	34.6	14 13 55.83
18	230	145 33 12.9	32 53.0	144.45	0.28	.0050676	35.4	14 9 59.92
19	231	146 31 0.5	30 40.4	144.52	0.38	.0049817	36.2	14 6 4.02
20	232	147 28 49.8	28 29.5	144.59	0.45	.0048939	37.0	14 2 8.11
21	233	148 26 40.7	26 20.3	144.65	0.49	.0048042	37.8	13 58 12.20
22	234	149 24 33.1	24 12.6	144.72	0.50	.0047126	38.6	13 54 16.29
23	235	150 22 27.1	22 6.5	144.78	0.48	.0046190	39.4	13 50 20.38
24	236	151 20 22.6	20 1.8	144.84	0.43	.0045233	40.2	13 46 24.47
25	237	152 18 19.6	17 58.7	144.90	0.35	.0044256	41.0	13 42 28.56
26	238	153 16 18.0	15 57.0	144.96	0.26	.0043260	41.7	13 38 32.63
27	239	154 14 17.7	13 56.6	145.02	0.14	.0042248	42.4	13 34 36.74
28	240	155 12 18.8	11 57.6	145.07	+0.02	.0041221	43.0	13 30 40.83
29	241	156 10 21.3	9 59.9	145.13	−0.11	.0040179	43.6	13 26 44.92
30	242	157 8 25.2	8 3.7	145.19	0.25	.0039123	44.2	13 22 49.02
31	243	158 6 30.5	6 8.9	145.25	0.36	.0038054	44.7	13 18 53.12
32	244	159 4 37.1	4 15.4	145.30	−0.46	0.0036975	−45.1	13 14 57.21

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
$-9^s.8296$

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 9.9	15 15.8	55 32.7	+1.71	55 54.4	+1.89	5 54.1	1.87	8.1
2	15 22.2	15 29.2	56 18.0	2.05	56 43.4	2.19	6 41.0	2.04	9.1
3	15 36.5	15 44.1	57 10.4	2.29	57 38.4	2.37	7 32.5	2.26	10.1
4	15 51.9	15 59.7	58 7.0	2.40	58 35.7	2.38	8 29.1	2.46	11.1
5	16 7.4	16 14.7	59 3.9	2.31	59 30.8	2.18	9 30.2	2.61	12.1
6	16 21.6	16 27.7	59 55.9	1.99	60 18.4	1.75	10 33.7	2.66	13.1
7	16 32.9	16 37.1	60 37.7	1.46	60 53.2	1.12	11 36.8	2.59	14.1
8	16 40.2	16 42.0	61 4.4	+0.74	61 11.0	+0.35	12 37.3	2.44	15.1
9	16 42.5	16 41.7	61 12.9	−0.04	61 10.0	−0.43	13 34.0	2.28	16.1
10	16 39.7	16 36.5	61 2.5	0.80	60 50.8	1.14	14 27.2	2.16	17.1
11	16 32.3	16 27.2	60 35.3	1.43	60 16.6	1.68	15 17.9	2.08	18.1
12	16 21.4	16 15.0	59 55.2	1.87	59 31.9	2.00	16 7.3	2.05	19.1
13	16 8.3	16 1.4	59 7.3	2.08	58 42.0	2.12	16 56.8	2.07	20.1
14	15 54.5	15 47.6	58 16.5	2.12	57 51.2	2.09	17 47.1	2.13	21.1
15	15 40.9	15 34.4	57 26.5	2.02	57 2.8	1.92	18 38.9	2.19	22.1
16	15 28.3	15 22.6	56 40.3	1.82	56 19.2	1.70	19 32.1	2.23	23.1
17	15 17.2	15 12.2	55 59.5	1.58	55 41.2	1.46	20 25.9	2.24	24.1
18	15 7.6	15 3.5	55 24.4	1.33	55 9.2	1.20	21 19.1	2.19	25.1
19	14 59.8	14 56.5	54 55.6	1.07	54 43.5	0.95	22 10.6	2.09	26.1
20	14 53.6	14 51.1	54 32.8	0.83	54 23.5	0.71	22 59.4	1.97	27.1
21	14 48.9	14 47.1	54 15.6	0.60	54 9.1	0.49	23 45.3	1.85	28.1
22	14 45.7	14 44.6	54 3.9	0.38	54 0.0	0.27	☌		29.1
23	14 43.9	14 43.5	53 57.3	−0.16	53 55.9	−0.05	0 28.5	1.75	0.4
24	14 43.5	14 43.9	53 55.9	+0.06	53 57.4	+0.18	1 9.6	1.68	1.4
25	14 44.7	14 46.0	54 0.4	0.31	54 4.9	0.45	1 49.4	1.64	2.4
26	14 47.7	14 49.9	54 11.2	0.60	54 19.3	0.75	2 28.8	1.65	3.4
27	14 52.6	14 55.8	54 29.2	0.91	54 41.1	1.07	3 8.9	1.69	4.4
28	14 59.6	15 4.0	54 55.0	1.24	55 11.0	1.41	3 50.6	1.79	5.4
29	15 8.9	15 14.3	55 29.0	1.58	55 49.0	1.74	4 35.1	1.93	6.4
30	15 20.3	15 26.8	56 10.9	1.90	56 34.6	2.05	5 23.5	2.11	7.4
31	15 33.7	15 41.0	57 0.0	2.18	57 26.8	2.28	6 16.5	2.31	8.4
32	15 48.5	15 56.3	57 54.6	+2.35	58 23.1	+2.39	7 13.9	2.48	9.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 1.					SUNDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 24 9.88	1.9449	S.13 9 56.8	12.474	0	16 4 54.11	2.2749	S.21 58 39.0	9.050
1	14 26 6.73	1.9502	13 22 23.9	12.431	1	16 7 10.84	2.2829	22 7 38.9	8.944
2	14 28 3.90	1.9556	13 34 48.5	12.389	2	16 9 28.06	2.2909	22 16 32.3	8.837
3	14 30 1.40	1.9610	13 47 10.4	12.345	3	16 11 45.76	2.2990	22 25 19.3	8.728
4	14 31 59.22	1.9666	13 59 29.6	12.299	4	16 14 3.94	2.3071	22 33 59.7	8.617
5	14 33 57.38	1.9722	14 11 46.0	12.252	5	16 16 22.61	2.3152	22 42 33.4	8.505
6	14 35 55.89	1.9780	14 23 59.6	12.204	6	16 18 41.76	2.3232	22 51 0.3	8.391
7	14 37 54.74	1.9838	14 36 10.3	12.155	7	16 21 1.39	2.3313	22 59 20.3	8.276
8	14 39 53.94	1.9897	14 48 17.9	12.105	8	16 23 21.51	2.3393	23 7 33.4	8.159
9	14 41 53.50	1.9956	15 0 22.5	12.054	9	16 25 42.11	2.3474	23 15 39.4	8.040
10	14 43 53.41	2.0016	15 12 24.1	12.002	10	16 28 3.20	2.3554	23 23 38.2	7.919
11	14 45 53.69	2.0077	15 24 22.5	11.948	11	16 30 24.77	2.3635	23 31 29.7	7.797
12	14 47 54.33	2.0138	15 36 17.6	11.893	12	16 32 46.82	2.3716	23 39 13.8	7.673
13	14 49 55.34	2.0200	15 48 9.4	11.837	13	16 35 9.36	2.3797	23 46 50.5	7.548
14	14 51 56.73	2.0263	15 59 57.8	11.780	14	16 37 32.38	2.3877	23 54 19.6	7.421
15	14 53 58.50	2.0327	16 11 42.7	11.722	15	16 39 55.88	2.3956	24 1 41.0	7.293
16	14 56 0.66	2.0392	16 23 24.2	11.663	16	16 42 19.85	2.4035	24 8 54.7	7.163
17	14 58 3.20	2.0457	16 35 2.1	11.602	17	16 44 44.30	2.4114	24 16 0.5	7.031
18	15 0 6.14	2.0522	16 46 36.2	11.540	18	16 47 9.22	2.4193	24 22 58.4	6.897
19	15 2 9.47	2.0588	16 58 6.6	11.477	19	16 49 34.62	2.4272	24 29 48.2	6.762
20	15 4 13.20	2.0655	17 9 33.2	11.413	20	16 52 0.49	2.4351	24 36 29.8	6.625
21	15 6 17.34	2.0723	17 20 55.9	11.347	21	16 54 26.83	2.4429	24 43 3.2	6.487
22	15 8 21.88	2.0791	17 32 14.6	11.280	22	16 56 53.64	2.4506	24 49 28.2	6.346
23	15 10 26.83	2.0860	S.17 43 29.3	11.211	23	16 59 20.91	2.4583	S.24 55 44.7	6.204
	SATURDAY 2.					MONDAY 4.			
0	15 12 32.20	2.0930	S.17 54 39.9	11.141	0	17 1 48.64	2.4660	S.25 1 52.7	6.061
1	15 14 37.99	2.1000	18 5 46.3	11.070	1	17 4 16.83	2.4736	25 7 52.1	5.917
2	15 16 44.20	2.1071	18 16 48.3	10.998	2	17 6 45.47	2.4811	25 13 42.7	5.770
3	15 18 50.84	2.1142	18 27 46.0	10.925	3	17 9 14.56	2.4886	25 19 24.5	5.622
4	15 20 57.90	2.1214	18 38 39.3	10.850	4	17 11 44.10	2.4960	25 24 57.3	5.472
5	15 23 5.40	2.1287	18 49 28.0	10.773	5	17 14 14.09	2.5034	25 30 21.1	5.321
6	15 25 13.34	2.1360	19 0 12.1	10.695	6	17 16 44.51	2.5106	25 35 35.8	5.168
7	15 27 21.72	2.1433	19 10 51.5	10.617	7	17 19 15.37	2.5178	25 40 41.3	5.014
8	15 29 30.54	2.1507	19 21 26.1	10.537	8	17 21 46.65	2.5249	25 45 37.5	4.858
9	15 31 39.81	2.1582	19 31 55.9	10.455	9	17 24 18.36	2.5320	25 50 24.3	4.701
10	15 33 49.52	2.1657	19 42 20.7	10.372	10	17 26 50.49	2.5390	25 55 1.6	4.542
11	15 35 59.69	2.1733	19 52 40.5	10.287	11	17 29 23.03	2.5458	25 59 29.3	4.382
12	15 38 10.31	2.1809	20 2 55.1	10.201	12	17 31 55.99	2.5525	26 3 47.4	4.220
13	15 40 21.39	2.1885	20 13 4.5	10.113	13	17 34 29.35	2.5592	26 7 55.7	4.057
14	15 42 32.93	2.1962	20 23 8.7	10.024	14	17 37 3.10	2.5658	26 11 54.2	3.892
15	15 44 44.93	2.2039	20 33 7.5	9.933	15	17 39 37.24	2.5722	26 15 42.8	3.726
16	15 46 57.40	2.2117	20 43 0.7	9.841	16	17 42 11.76	2.5785	26 19 21.3	3.558
17	15 49 10.34	2.2195	20 52 48.4	9.748	17	17 44 46.66	2.5847	26 22 49.7	3.388
18	15 51 23.74	2.2273	21 2 30.5	9.653	18	17 47 21.93	2.5908	26 26 7.9	3.218
19	15 53 37.61	2.2352	21 12 6.8	9.557	19	17 49 57.56	2.5968	26 29 15.9	3.047
20	15 55 51.96	2.2431	21 21 37.3	9.459	20	17 52 33.55	2.6027	26 32 13.5	2.874
21	15 58 6.78	2.2510	21 31 1.9	9.359	21	17 55 9.89	2.6085	26 35 0.7	2.700
22	16 0 22.08	2.2589	21 40 20.4	9.258	22	17 57 46.57	2.6141	26 37 37.5	2.525
23	16 2 37.86	2.2669	21 49 32.8	9.155	23	18 0 23.58	2.6196	26 40 3.7	2.348
24	16 4 54.11	2.2749	S.21 58 39.0	9.050	24	18 3 0.92	2.6250	S.26 42 19.3	2.170

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 3 0.92	2.6250	S.26 42 19.3	2.170
1	18 5 38.58	2.6302	26 44 24.2	1.992
2	18 8 16.54	2.6352	26 46 18.3	1.812
3	18 10 54.80	2.6401	26 48 1.5	1.630
4	18 13 33.35	2.6449	26 49 33.9	1.447
5	18 16 12.18	2.6495	26 50 55.3	1.264
6	18 18 51.29	2.6540	26 52 5.6	1.080
7	18 21 30.66	2.6583	26 53 4.8	0.894
8	18 24 10.28	2.6624	26 53 52.9	0.708
9	18 26 50.15	2.6664	26 54 29.8	0.522
10	18 29 30.25	2.6702	26 54 55.5	0.334
11	18 32 10.58	2.6739	26 55 9.9	−0.145
12	18 34 51.12	2.6774	26 55 12.9	+0.045
13	18 37 31.87	2.6807	26 55 4.5	0.235
14	18 40 12.81	2.6838	26 54 44.7	0.426
15	18 42 53.93	2.6868	26 54 13.4	0.617
16	18 45 35.23	2.6896	26 53 30.6	0.809
17	18 48 16.69	2.6923	26 52 36.3	1.002
18	18 50 58.31	2.6948	26 51 30.4	1.195
19	18 53 40.07	2.6971	26 50 12.9	1.389
20	18 56 21.96	2.6992	26 48 43.7	1.583
21	18 59 3.97	2.7011	26 47 2.9	1.777
22	19 1 46.09	2.7028	26 45 10.5	1.972
23	19 4 28.31	2.7044	S.26 43 6.4	2.167

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 7 10.62	2.7058	S.26 40 50.5	2.362
1	19 9 53.01	2.7070	26 38 22.9	2.558
2	19 12 35.46	2.7080	26 35 43.6	2.753
3	19 15 17.97	2.7088	26 32 52.5	2.949
4	19 18 0.52	2.7096	26 29 49.7	3.144
5	19 20 43.11	2.7100	26 26 35.2	3.340
6	19 23 25.72	2.7103	26 23 8.9	3.536
7	19 26 8.34	2.7104	26 19 30.9	3.732
8	19 28 50.97	2.7103	26 15 41.1	3.927
9	19 31 33.59	2.7101	26 11 39.6	4.122
10	19 34 16.18	2.7097	26 7 26.4	4.317
11	19 36 58.74	2.7090	26 3 1.5	4.512
12	19 39 41.26	2.7082	25 58 25.0	4.706
13	19 42 23.73	2.7073	25 53 36.8	4.900
14	19 45 6.14	2.7062	25 48 37.0	5.094
15	19 47 48.48	2.7049	25 43 25.5	5.287
16	19 50 30.73	2.7034	25 38 2.5	5.480
17	19 53 12.89	2.7018	25 32 27.9	5.672
18	19 55 54.95	2.7000	25 26 41.9	5.863
19	19 58 36.89	2.6980	25 20 44.4	6.054
20	20 1 18.71	2.6959	25 14 35.4	6.244
21	20 4 0.40	2.6937	25 8 15.1	6.432
22	20 6 41.95	2.6913	25 1 43.5	6.620
23	20 9 23.35	2.6887	24 55 0.6	6.808
24	20 12 4.59	2.6859	S.24 48 6.5	6.995

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 12 4.59	2.6859	S.24 48 6.5	6.995
1	20 14 45.66	2.6830	24 41 1.2	7.181
2	20 17 26.55	2.6800	24 33 44.8	7.365
3	20 20 7.25	2.6768	24 26 17.4	7.548
4	20 22 47.76	2.6735	24 18 39.0	7.731
5	20 25 28.07	2.6701	24 10 49.7	7.912
6	20 28 8.17	2.6665	24 2 49.5	8.092
7	20 30 48.05	2.6628	23 54 38.6	8.271
8	20 33 27.70	2.6590	23 46 17.0	8.449
9	20 36 7.12	2.6550	23 37 44.8	8.625
10	20 38 46.30	2.6510	23 29 2.0	8.800
11	20 41 25.23	2.6468	23 20 8.7	8.974
12	20 44 3.91	2.6425	23 11 5.1	9.146
13	20 46 42.33	2.6380	23 1 51.2	9.317
14	20 49 20.47	2.6334	22 52 27.0	9.486
15	20 51 58.34	2.6288	22 42 52.7	9.654
16	20 54 35.93	2.6241	22 33 8.5	9.820
17	20 57 13.23	2.6193	22 23 14.3	9.985
18	20 59 50.25	2.6144	22 13 10.3	10.148
19	21 2 26.97	2.6094	22 2 56.5	10.310
20	21 5 3.38	2.6043	21 52 33.1	10.470
21	21 7 39.49	2.5992	21 42 0.2	10.628
22	21 10 15.28	2.5939	21 31 17.8	10.784
23	21 12 50.76	2.5886	S.21 20 26.1	10.939

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination	Diff. for 1 m.
0	21 15 25.91	2.5832	S.21 9 25.1	11.092
1	21 18 0.74	2.5778	20 58 15.0	11.243
2	21 20 35.25	2.5723	20 46 55.9	11.392
3	21 23 9.43	2.5668	20 35 27.9	11.539
4	21 25 43.27	2.5612	20 23 51.2	11.684
5	21 28 16.77	2.5555	20 12 5.8	11.828
6	21 30 49.93	2.5498	20 0 11.8	11.970
7	21 33 22.75	2.5441	19 48 9.4	12.110
8	21 35 55.22	2.5384	19 35 58.6	12.248
9	21 38 27.35	2.5326	19 23 39.6	12.383
10	21 40 59.13	2.5267	19 11 12.6	12.517
11	21 43 30.56	2.5208	18 58 37.6	12.649
12	21 46 1.63	2.5148	18 45 54.7	12.779
13	21 48 32.35	2.5090	18 33 4.1	12.907
14	21 51 2.71	2.5031	18 20 5.9	13.033
15	21 53 32.71	2.4971	18 7 0.2	13.156
16	21 56 2.36	2.4912	17 53 47.2	13.278
17	21 58 31.65	2.4852	17 40 26.9	13.397
18	22 1 0.58	2.4792	17 26 59.5	13.514
19	22 3 29.15	2.4732	17 13 25.1	13.630
20	22 5 57.36	2.4672	16 59 43.9	13.743
21	22 8 25.21	2.4612	16 45 56.0	13.853
22	22 10 52.70	2.4552	16 32 1.5	13.962
23	22 13 19.83	2.4492	16 18 0.5	14.069
24	22 15 46.61	2.4432	S.16 3 53.2	14.174

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 9.					MONDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 15 46.61	2.4432	S. 16 3 53.2	14.174	0	0 6 56.91	2.2118	S. 3 23 40.5	16.707
1	22 18 13.03	2.4373	15 49 39.7	14.277	1	0 9 9.52	2.2086	3 6 58.0	16.711
2	22 20 39.09	2.4314	15 35 20.0	14.377	2	0 11 21.94	2.2056	2 50 15.2	16.713
3	22 23 4.80	2.4255	15 20 54.4	14.474	3	0 13 34.18	2.2026	2 33 32.3	16.713
4	22 25 30.15	2.4196	15 6 23.0	14.570	4	0 15 46.25	2.1997	2 16 49.6	16.711
5	22 27 55.15	2.4138	14 51 46.0	14.664	5	0 17 58.14	2.1968	2 0 7.0	16.708
6	22 30 19.81	2.4080	14 37 3.4	14.756	6	0 20 9.87	2.1940	1 43 24.6	16.703
7	22 32 44.12	2.4022	14 22 15.3	14.846	7	0 22 21.43	2.1914	1 26 42.5	16.697
8	22 35 8.07	2.3964	14 7 21.9	14.933	8	0 24 32.84	2.1889	1 10 0.9	16.689
9	22 37 31.68	2.3907	13 52 23.3	15.018	9	0 26 44.10	2.1864	0 53 19.9	16.678
10	22 39 54.95	2.3850	13 37 19.7	15.101	10	0 28 55.21	2.1840	0 36 39.5	16.666
11	22 42 17.88	2.3793	13 22 11.2	15.182	11	0 31 6.18	2.1817	0 19 59.9	16.653
12	22 44 40.47	2.3737	13 6 57.9	15.261	12	0 33 17.01	2.1795	S. 0 3 21.1	16.638
13	22 47 2.73	2.3682	12 51 40.0	15.337	13	0 35 27.71	2.1773	N. 0 13 16.7	16.621
14	22 49 24.65	2.3627	12 36 17.5	15.411	14	0 37 38.28	2.1752	0 29 53.4	16.602
15	22 51 46.24	2.3572	12 20 50.6	15.483	15	0 39 48.73	2.1732	0 46 29.0	16.582
16	22 54 7.51	2.3517	12 5 19.5	15.553	16	0 41 59.06	2.1713	1 3 3.3	16.560
17	22 56 28.45	2.3463	11 49 44.2	15.622	17	0 44 9.28	2.1694	1 19 36.3	16.537
18	22 58 49.07	2.3410	11 34 4.9	15.688	18	0 46 19.39	2.1676	1 36 7.8	16.512
19	23 1 9.37	2.3357	11 18 21.7	15.751	19	0 48 29.40	2.1660	1 52 37.8	16.486
20	23 3 29.36	2.3305	11 2 34.8	15.812	20	0 50 39.31	2.1644	2 9 6.1	16.458
21	23 5 49.03	2.3253	10 46 44.3	15.872	21	0 52 49.13	2.1628	2 25 32.7	16.428
22	23 8 8.40	2.3202	10 30 50.2	15.929	22	0 54 58.85	2.1614	2 41 57.5	16.397
23	23 10 27.46	2.3152	S. 10 14 52.8	15.983	23	0 57 8.49	2.1601	N. 2 58 20.4	16.364
	SUNDAY 10.					TUESDAY 12.			
0	23 12 46.23	2.3102	S. 9 58 52.2	16.036	0	0 59 18.06	2.1588	N. 3 14 41.2	16.330
1	23 15 4.70	2.3053	9 42 48.4	16.088	1	1 1 27.55	2.1576	3 30 59.9	16.294
2	23 17 22.87	2.3005	9 26 41.6	16.137	2	1 3 36.97	2.1565	3 47 16.5	16.257
3	23 19 40.75	2.2957	9 10 32.0	16.183	3	1 5 46.33	2.1555	4 3 30.8	16.218
4	23 21 58.35	2.2910	8 54 19.6	16.228	4	1 7 55.63	2.1546	4 19 42.7	16.178
5	23 24 15.66	2.2863	8 38 4.6	16.271	5	1 10 4.88	2.1537	4 35 52.1	16.136
6	23 26 32.70	2.2817	8 21 47.1	16.312	6	1 12 14.07	2.1529	4 51 59.0	16.093
7	23 28 49.46	2.2772	8 5 27.2	16.350	7	1 14 23.22	2.1522	5 8 3.3	16.048
8	23 31 5.96	2.2727	7 49 5.1	16.387	8	1 16 32.33	2.1515	5 24 4.8	16.002
9	23 33 22.19	2.2683	7 32 40.8	16.422	9	1 18 41.40	2.1509	5 40 3.5	15.955
10	23 35 38.16	2.2640	7 16 14.5	16.455	10	1 20 50.44	2.1504	5 55 59.4	15.906
11	23 37 53.87	2.2598	6 59 46.3	16.485	11	1 22 59.45	2.1500	6 11 52.3	15.855
12	23 40 9.33	2.2557	6 43 16.3	16.513	12	1 25 8.44	2.1497	6 27 42.0	15.803
13	23 42 24.55	2.2516	6 26 44.7	16.540	13	1 27 17.41	2.1494	6 43 28.6	15.751
14	23 44 39.52	2.2476	6 10 11.5	16.565	14	1 29 26.37	2.1492	6 59 12.1	15.697
15	23 46 54.25	2.2436	5 53 36.9	16.587	15	1 31 35.32	2.1491	7 14 52.3	15.641
16	23 49 8.75	2.2398	5 37 1.0	16.608	16	1 33 44.26	2.1490	7 30 29.0	15.584
17	23 51 23.02	2.2360	5 20 23.9	16.627	17	1 35 53.20	2.1490	7 46 2.3	15.526
18	23 53 37.07	2.2323	5 3 45.8	16.644	18	1 38 2.14	2.1491	8 1 32.1	15.466
19	23 55 50.90	2.2287	4 47 6.7	16.659	19	1 40 11.09	2.1492	8 16 58.3	15.405
20	23 58 4.51	2.2252	4 30 26.7	16.673	20	1 42 20.05	2.1494	8 32 20.7	15.343
21	0 0 17.91	2.2217	4 13 46.0	16.684	21	1 44 29.03	2.1498	8 47 39.4	15.279
22	0 2 31.11	2.2183	3 57 4.6	16.693	22	1 46 38.03	2.1502	9 2 54.2	15.214
23	0 4 44.11	2.2150	3 40 22.7	16.701	23	1 48 47.05	2.1506	9 18 5.1	15.149
24	0 6 56.91	2.2118	S. 3 23 40.5	16.707	24	1 50 56.10	2.1511	N. 9 33 12.1	15.082

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 50 56.10	2.1511	N. 9 33 12.1	15.082
1	1 53 5.18	2.1517	9 48 15.0	15.013
2	1 55 14.30	2.1523	10 3 13.7	14.943
3	1 57 23.46	2.1530	10 18 8.2	14.873
4	1 59 32.66	2.1538	10 32 58.4	14.801
5	2 1 41.91	2.1546	10 47 44.2	14.727
6	2 3 51.21	2.1555	11 2 25.6	14.652
7	2 6 0.56	2.1564	11 17 2.5	14.577
8	2 8 9.98	2.1574	11 31 34.8	14.500
9	2 10 19.46	2.1585	11 46 2.4	14.421
10	2 12 29.00	2.1596	12 0 25.3	14.342
11	2 14 38.61	2.1608	12 14 43.4	14.262
12	2 16 48.29	2.1620	12 28 56.7	14.181
13	2 18 58.05	2.1633	12 43 5.1	14.098
14	2 21 7.88	2.1646	12 57 8.4	14.014
15	2 23 17.80	2.1660	13 11 6.7	13.929
16	2 25 27.80	2.1674	13 24 59.9	13.843
17	2 27 37.89	2.1689	13 38 47.9	13.756
18	2 29 48.07	2.1705	13 52 30.6	13.668
19	2 31 58.35	2.1721	14 6 8.0	13.578
20	2 34 8.72	2.1737	14 19 40.0	13.488
21	2 36 19.19	2.1753	14 33 6.5	13.397
22	2 38 29.76	2.1770	14 46 27.6	13.305
23	2 40 40.44	2.1788	N.14 59 43.1	13.212

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 42 51.22	2.1806	N.15 12 53.0	13.118
1	2 45 2.11	2.1825	15 25 57.2	13.022
2	2 47 13.12	2.1844	15 38 55.6	12.925
3	2 49 24.24	2.1863	15 51 48.2	12.828
4	2 51 35.48	2.1883	16 4 34.9	12.729
5	2 53 46.84	2.1903	16 17 15.6	12.629
6	2 55 58.32	2.1924	16 29 50.4	12.529
7	2 58 9.93	2.1945	16 42 19.2	12.428
8	3 0 21.66	2.1966	16 54 41.8	12.326
9	3 2 33.52	2.1987	17 6 58.3	12.223
10	3 4 45.50	2.2008	17 19 8.5	12.119
11	3 6 57.61	2.2030	17 31 12.4	12.013
12	3 9 9.86	2.2052	17 43 10.0	11.907
13	3 11 22.24	2.2074	17 55 1.2	11.800
14	3 13 34.75	2.2097	18 6 46.0	11.692
15	3 15 47.40	2.2120	18 18 24.2	11.583
16	3 18 0.19	2.2143	18 29 55.9	11.473
17	3 20 13.12	2.2166	18 41 21.0	11.362
18	3 22 26.18	2.2189	18 52 39.4	11.250
19	3 24 39.38	2.2212	19 3 51.1	11.138
20	3 26 52.73	2.2235	19 14 56.0	11.025
21	3 29 6.22	2.2259	19 25 54.1	10.911
22	3 31 19.84	2.2283	19 36 45.3	10.796
23	3 33 33.61	2.2307	19 47 29.6	10.679
24	3 35 47.53	2.2331	N.19 58 6.8	10.562

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 35 47.53	2.2331	N.19 58 6.8	10.562
1	3 38 1.59	2.2355	20 8 37.0	10.445
2	3 40 15.79	2.2379	20 19 0.2	10.327
3	3 42 30.14	2.2403	20 29 16.3	10.208
4	3 44 44.63	2.2428	20 39 25.2	10.088
5	3 46 59.27	2.2452	20 49 26.9	9.968
6	3 49 14.05	2.2476	20 59 21.3	9.847
7	3 51 28.97	2.2499	21 9 8.4	9.724
8	3 53 44.04	2.2523	21 18 48.2	9.601
9	3 55 59.25	2.2547	21 28 20.6	9.478
10	3 58 14.60	2.2571	21 37 45.5	9.354
11	4 0 30.09	2.2594	21 47 2.9	9.228
12	4 2 45.73	2.2618	21 56 12.8	9.102
13	4 5 1.51	2.2641	22 5 15.1	8.976
14	4 7 17.42	2.2664	22 14 9.9	8.849
15	4 9 33.47	2.2687	22 22 57.0	8.721
16	4 11 49.66	2.2710	22 31 36.4	8.592
17	4 14 5.99	2.2733	22 40 8.1	8.463
18	4 16 22.45	2.2755	22 48 32.0	8.333
19	4 18 39.04	2.2777	22 56 48.1	8.203
20	4 20 55.77	2.2799	23 4 56.4	8.072
21	4 23 12.63	2.2820	23 12 56.8	7.941
22	4 25 29.61	2.2841	23 20 49.3	7.809
23	4 27 46.72	2.2862	N.23 28 33.8	7.676

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 30 3.95	2.2883	N.23 36 10.4	7.542
1	4 32 21.30	2.2903	23 43 38.9	7.408
2	4 34 38.78	2.2923	23 50 59.4	7.274
3	4 36 56.37	2.2942	23 58 11.8	7.139
4	4 39 14.08	2.2961	24 5 16.1	7.004
5	4 41 31.90	2.2979	24 12 12.2	6.868
6	4 43 49.82	2.2997	24 19 0.2	6.731
7	4 46 7.86	2.3015	24 25 40.0	6.594
8	4 48 26.00	2.3032	24 32 11.5	6.457
9	4 50 44.24	2.3048	24 38 34.8	6.319
10	4 53 2.58	2.3064	24 44 49.8	6.181
11	4 55 21.01	2.3080	24 50 56.5	6.042
12	4 57 39.54	2.3095	24 56 54.8	5.903
13	4 59 58.16	2.3110	25 2 44.8	5.763
14	5 2 16.86	2.3124	25 8 26.4	5.623
15	5 4 35.65	2.3137	25 13 59.6	5.483
16	5 6 54.51	2.3150	25 19 24.3	5.342
17	5 9 13.44	2.3162	25 24 40.6	5.201
18	5 11 32.45	2.3174	25 29 48.4	5.060
19	5 13 51.53	2.3185	25 34 47.8	4.918
20	5 16 10.67	2.3195	25 39 38.6	4.776
21	5 18 29.87	2.3205	25 44 20.9	4.634
22	5 20 49.13	2.3214	25 48 54.7	4.492
23	5 23 8.44	2.3222	25 53 20.0	4.350
24	5 25 27.79	2.3230	N.25 57 36.7	4.207

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 17.					TUESDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 25 27.79	2.3230	N.25 57 36.7	4.207	0	7 16 23.28	2.2683	N.26 34 49.8	2.561
1	5 27 47.19	2.3237	26 1 44.8	4.063	1	7 18 39.29	2.2653	26 32 10.9	2.714
2	5 30 6.63	2.3243	26 5 44.3	3.920	2	7 20 55.11	2.2622	26 29 24.1	2.847
3	5 32 26.10	2.3248	26 9 35.2	3.777	3	7 23 10.74	2.2590	26 26 29.3	2.979
4	5 34 45.61	2.3253	26 13 17.6	3.634	4	7 25 26.19	2.2557	26 23 26.6	3.111
5	5 37 5.15	2.3258	26 16 51.3	3.490	5	7 27 41.44	2.2524	26 20 16.0	3.243
6	5 39 24.71	2.3261	26 20 16.4	3.347	6	7 29 56.48	2.2491	26 16 57.6	3.372
7	5 41 44.29	2.3264	26 23 32.8	3.203	7	7 32 11.32	2.2457	26 13 31.4	3.502
8	5 44 3.88	2.3266	26 26 40.7	3.059	8	7 34 25.96	2.2422	26 9 57.4	3.631
9	5 46 23.48	2.3268	26 29 39.9	2.914	9	7 36 40.39	2.2387	26 6 15.7	3.759
10	5 48 43.09	2.3268	26 32 30.4	2.770	10	7 38 54.61	2.2351	26 2 26.3	3.886
11	5 51 2.69	2.3267	26 35 12.3	2.627	11	7 41 8.61	2.2315	25 58 29.3	4.013
12	5 53 22.29	2.3265	26 37 45.6	2.483	12	7 43 22.39	2.2279	25 54 24.7	4.139
13	5 55 41.88	2.3263	26 40 10.2	2.338	13	7 45 35.95	2.2241	25 50 12.6	4.265
14	5 58 1.45	2.3260	26 42 26.1	2.193	14	7 47 49.28	2.2202	25 45 52.9	4.390
15	6 0 21.00	2.3257	26 44 33.4	2.049	15	7 50 2.38	2.2163	25 41 25.8	4.514
16	6 2 40.53	2.3252	26 46 32.0	1.905	16	7 52 15.24	2.2124	25 36 51.2	4.638
17	6 5 0.03	2.3247	26 48 22.0	1.762	17	7 54 27.87	2.2085	25 32 9.2	4.761
18	6 7 19.50	2.3241	26 50 3.4	1.617	18	7 56 40.26	2.2045	25 27 19.9	4.882
19	6 9 38.93	2.3234	26 51 36.1	1.473	19	7 58 52.41	2.2004	25 22 23.3	5.003
20	6 11 58.31	2.3226	26 53 0.2	1.330	20	8 1 4.31	2.1963	25 17 19.5	5.123
21	6 14 17.64	2.3218	26 54 15.7	1.187	21	8 3 15.97	2.1922	25 12 8.5	5.243
22	6 16 36.92	2.3208	26 55 22.6	1.044	22	8 5 27.38	2.1881	25 6 50.3	5.362
23	6 18 56.14	2.3198	N.26 56 20.9	0.900	23	8 7 38.54	2.1839	N.25 1 25.0	5.480
	MONDAY 18.					WEDNESDAY 20.			
0	6 21 15.29	2.3187	N.26 57 10.6	0.757	0	8 9 49.45	2.1797	N.24 55 52.7	5.597
1	6 23 34.38	2.3175	26 57 51.7	0.614	1	8 12 0.10	2.1754	24 50 13.3	5.714
2	6 25 53.39	2.3162	26 58 24.3	0.471	2	8 14 10.50	2.1711	24 44 27.0	5.829
3	6 28 12.32	2.3148	26 58 48.3	0.328	3	8 16 20.64	2.1667	24 38 33.8	5.944
4	6 30 31.17	2.3134	26 59 3.7	0.186	4	8 18 30.51	2.1623	24 32 33.7	6.058
5	6 32 49.93	2.3119	26 59 10.6	+0.044	5	8 20 40.12	2.1579	24 26 26.8	6.172
6	6 35 8.60	2.3103	26 59 9.0	−0.097	6	8 22 49.46	2.1535	24 20 13.1	6.284
7	6 37 27.17	2.3087	26 58 58.9	0.238	7	8 24 58.54	2.1491	24 13 52.7	6.395
8	6 39 45.64	2.3069	26 58 40.4	0.380	8	8 27 7.35	2.1446	24 7 25.7	6.505
9	6 42 4.00	2.3051	26 58 13.4	0.521	9	8 29 15.89	2.1401	24 0 52.1	6.615
10	6 44 22.25	2.3032	26 57 37.9	0.661	10	8 31 24.16	2.1356	23 54 11.9	6.724
11	6 46 40.38	2.3012	26 56 54.0	0.801	11	8 33 32.16	2.1310	23 47 25.2	6.832
12	6 48 58.39	2.2991	26 56 1.8	0.941	12	8 35 39.88	2.1264	23 40 32.1	6.939
13	6 51 16.27	2.2969	26 55 1.2	1.080	13	8 37 47.33	2.1218	23 33 32.6	7.045
14	6 53 34.02	2.2947	26 53 52.2	1.219	14	8 39 54.50	2.1173	23 26 26.7	7.150
15	6 55 51.63	2.2924	26 52 34.9	1.357	15	8 42 1.40	2.1127	23 19 14.5	7.255
16	6 58 9.11	2.2900	26 51 9.4	1.495	16	8 44 8.02	2.1081	23 11 56.1	7.359
17	7 0 26.44	2.2875	26 49 35.6	1.633	17	8 46 14.36	2.1034	23 4 31.5	7.461
18	7 2 43.61	2.2850	26 47 53.5	1.770	18	8 48 20.43	2.0988	22 57 0.8	7.562
19	7 5 0.63	2.2824	26 46 3.2	1.906	19	8 50 26.22	2.0941	22 49 24.0	7.663
20	7 7 17.50	2.2797	26 44 4.8	2.042	20	8 52 31.72	2.0895	22 41 41.2	7.763
21	7 9 34.20	2.2769	26 41 58.2	2.178	21	8 54 36.94	2.0848	22 33 52.5	7.862
22	7 11 50.73	2.2741	26 39 43.5	2.313	22	8 56 41.89	2.0801	22 25 57.8	7.960
23	7 14 7.09	2.2712	26 37 20.7	2.448	23	8 58 46.56	2.0754	22 17 57.2	8.058
24	7 16 23.28	2.2683	N.26 34 49.8	2.581	24	9 0 50.94	2.0707	N 22 9 50.9	8.154

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 0 50.94	2.0707	N.22 9 50.9	8.154
1	9 2 55.04	2.0661	22 1 38.8	8.249
2	9 4 58.87	2.0614	21 53 21.0	8.343
3	9 7 2.41	2.0567	21 44 57.6	8.437
4	9 9 5.67	2.0520	21 36 28.6	8.530
5	9 11 8.65	2.0473	21 27 54.1	8.621
6	9 13 11.35	2.0426	21 19 14.1	8.712
7	9 15 13.77	2.0380	21 10 28.7	8.802
8	9 17 15.91	2.0334	21 1 37.9	8.891
9	9 19 17.77	2.0288	20 52 41.8	8.978
10	9 21 19.36	2.0242	20 43 40.5	9.065
11	9 23 20.67	2.0196	20 34 34.0	9.152
12	9 25 21.71	2.0149	20 25 22.3	9.238
13	9 27 22.47	2.0103	20 16 5.5	9.322
14	9 29 22.95	2.0057	20 6 43.7	9.405
15	9 31 23.16	2.0012	19 57 16.9	9.483
16	9 33 23.10	1.9967	19 47 45.2	9.569
17	9 35 22.77	1.9922	19 38 8.7	9.649
18	9 37 22.17	1.9877	19 28 27.3	9.729
19	9 39 21.30	1.9833	19 18 41.1	9.808
20	9 41 20.16	1.9788	19 8 50.3	9.886
21	9 43 18.76	1.9744	18 58 54.8	9.963
22	9 45 17.09	1.9700	18 48 54.7	10.039
23	9 47 15.16	1.9657	N.18 38 50.1	10.114

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 49 12.97	1.9613	N.18 28 41.0	10.188
1	9 51 10.52	1.9570	18 18 27.4	10.262
2	9 53 7.81	1.9527	18 8 9.5	10.335
3	9 55 4.85	1.9485	17 57 47.3	10.406
4	9 57 1.63	1.9442	17 47 20.8	10.477
5	9 58 58.13	1.9400	17 36 50.1	10.547
6	10 0 54.43	1.9358	17 26 15.2	10.616
7	10 2 50.46	1.9317	17 15 36.2	10.684
8	10 4 46.24	1.9276	17 4 53.1	10.751
9	10 6 41.78	1.9236	16 54 6.0	10.817
10	10 8 37.07	1.9196	16 43 15.1	10.882
11	10 10 32.13	1.9157	16 32 20.3	10.947
12	10 12 26.95	1.9117	16 21 21.5	11.011
13	10 14 21.53	1.9078	16 10 18.9	11.073
14	10 16 15.88	1.9039	15 59 12.7	11.135
15	10 18 9.99	1.9000	15 48 2.8	11.196
16	10 20 3.88	1.8962	15 36 49.2	11.256
17	10 21 57.54	1.8925	15 25 32.0	11.316
18	10 23 50.98	1.8888	15 14 11.3	11.375
19	10 25 44.20	1.8852	15 2 47.1	11.432
20	10 27 37.20	1.8815	14 51 19.5	11.488
21	10 29 29.98	1.8779	14 39 48.5	11.544
22	10 31 22.55	1.8744	14 28 14.2	11.599
23	10 33 14.91	1.8709	14 16 36.6	11.653
24	10 35 7.06	1.8675	N.14 4 55.8	11.706

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 35 7.06	1.8675	N.14 4 55.8	11.706
1	10 36 59.01	1.8641	13 53 11.8	11.759
2	10 38 50.75	1.8607	13 41 24.7	11.811
3	10 40 42.29	1.8574	13 29 34.5	11.862
4	10 42 33.64	1.8541	13 17 41.3	11.912
5	10 44 24.79	1.8509	13 5 45.2	11.960
6	10 46 15.75	1.8478	12 53 46.1	12.008
7	10 48 6.52	1.8447	12 41 44.1	12.056
8	10 49 57.11	1.8416	12 29 39.4	12.102
9	10 51 47.51	1.8386	12 17 31.9	12.148
10	10 53 37.74	1.8356	12 5 21.6	12.193
11	10 55 27.79	1.8327	11 53 8.6	12.238
12	10 57 17.67	1.8299	11 40 53.0	12.282
13	10 59 7.38	1.8271	11 28 34.8	12.324
14	11 0 56.92	1.8243	11 16 14.1	12.366
15	11 2 46.29	1.8216	11 3 50.9	12.407
16	11 4 35.51	1.8189	10 51 25.2	12.447
17	11 6 24.57	1.8163	10 38 57.1	12.487
18	11 8 13.47	1.8138	10 26 26.8	12.526
19	11 10 2.22	1.8113	10 13 54.2	12.563
20	11 11 50.83	1.8089	10 1 19.2	12.600
21	11 13 39.29	1.8065	9 48 42.0	12.637
22	11 15 27.61	1.8042	9 36 2.7	12.673
23	11 17 15.80	1.8020	N. 9 23 21.3	12.708

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 19 3.85	1.7998	N. 9 10 37.8	12.742
1	11 20 51.77	1.7976	8 57 52.3	12.775
2	11 22 39.56	1.7955	8 45 4.8	12.807
3	11 24 27.23	1.7935	8 32 15.4	12.839
4	11 26 14.78	1.7915	8 19 24.1	12.870
5	11 28 2.21	1.7896	8 6 31.0	12.900
6	11 29 49.53	1.7877	7 53 36.1	12.929
7	11 31 36.74	1.7859	7 40 39.5	12.958
8	11 33 23.84	1.7842	7 27 41.1	12.986
9	11 35 10.84	1.7825	7 14 41.0	13.014
10	11 36 57.74	1.7809	7 1 39.4	13.041
11	11 38 44.54	1.7793	6 48 36.2	13.067
12	11 40 31.25	1.7778	6 35 31.4	13.092
13	11 42 17.87	1.7763	6 22 25.1	13.116
14	11 44 4.41	1.7750	6 9 17.5	13.139
15	11 45 50.87	1.7737	5 56 8.5	13.162
16	11 47 37.25	1.7724	5 42 58.0	13.184
17	11 49 23.55	1.7712	5 29 46.2	13.206
18	11 51 9.79	1.7700	5 16 33.3	13.226
19	11 52 55.96	1.7689	5 3 19.2	13.246
20	11 54 42.06	1.7679	4 50 3.8	13.265
21	11 56 28.11	1.7670	4 36 47.3	13.283
22	11 58 14.10	1.7661	4 23 29.7	13.301
23	12 0 0.04	1.7653	4 10 11.1	13.319
24	12 1 45.93	1.7645	N. 3 56 51.4	13.336

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 25.					WEDNESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 1 45.93	1.7645	N. 3 56 51.4	13.336	0	13 26 49.26	1.8055	S. 6 48 37.3	13.284
1	12 3 31.78	1.7638	3 43 30.8	13.352	1	13 28 37.66	1.8080	7 1 53.8	13.265
2	12 5 17.59	1.7632	3 30 9.2	13.366	2	13 30 26.22	1.8106	7 15 9.1	13.245
3	12 7 3.36	1.7626	3 16 46.8	13.380	3	13 32 14.94	1.8133	7 28 23.2	13.224
4	12 8 49.10	1.7621	3 3 23.6	13.394	4	13 34 3.82	1.8160	7 41 36.0	13.203
5	12 10 34.81	1.7616	2 49 59.6	13.407	5	13 35 52.87	1.8188	7 54 47.5	13.181
6	12 12 20.49	1.7612	2 36 34.8	13.419	6	13 37 42.08	1.8217	8 7 57.7	13.158
7	12 14 6.15	1.7609	2 23 9.3	13.430	7	13 39 31.47	1.8247	8 21 6.5	13.134
8	12 15 51.80	1.7607	2 9 43.2	13.441	8	13 41 21.05	1.8278	8 34 13.8	13.109
9	12 17 37.43	1.7605	1 56 16.4	13.451	9	13 43 10.81	1.8309	8 47 19.6	13.084
10	12 19 23.06	1.7604	1 42 49.1	13.460	10	13 45 0.76	1.8341	9 0 23.9	13.058
11	12 21 8.68	1.7603	1 29 21.2	13.469	11	13 46 50.90	1.8373	9 13 26.6	13.032
12	12 22 54.29	1.7603	1 15 52.8	13.477	12	13 48 41.23	1.8406	9 26 27.7	13.004
13	12 24 39.91	1.7604	1 2 24.0	13.484	13	13 50 31.77	1.8440	9 39 27.1	12.975
14	12 26 25.54	1.7605	0 48 54.7	13.490	14	13 52 22.51	1.8475	9 52 24.7	12.945
15	12 28 11.18	1.7607	0 35 25.1	13.496	15	13 54 13.46	1.8510	10 5 20.5	12.915
16	12 29 56.82	1.7610	0 21 55.2	13.501	16	13 56 4.63	1.8546	10 18 14.5	12.884
17	12 31 42.48	1.7613	N. 0 8 25.0	13.505	17	13 57 56.02	1.8583	10 31 6.6	12.852
18	12 33 28.17	1.7617	S. 0 5 5.4	13.509	18	13 59 47.63	1.8621	10 43 56.7	12.819
19	12 35 13.89	1.7622	0 18 36.0	13.512	19	14 1 39.47	1.8659	10 56 44.8	12.785
20	12 36 59.63	1.7627	0 32 6.8	13.514	20	14 3 31.54	1.8698	11 9 30.9	12.750
21	12 38 45.41	1.7633	0 45 37.7	13.516	21	14 5 23.84	1.8738	11 22 14.9	12.715
22	12 40 31.23	1.7640	0 59 8.7	13.517	22	14 7 16.39	1.8778	11 34 56.7	12.679
23	12 42 17.09	1.7647	S. 1 12 39.7	13.517	23	14 9 9.18	1.8819	S. 11 47 36.3	12.642
	TUESDAY 26.					THURSDAY28.			
0	12 44 2.99	1.7655	S. 1 26 10.7	13.516	0	14 11 2.22	1.8861	S. 12 0 13.7	12.603
1	12 45 48.94	1.7663	1 39 41.6	13.514	1	14 12 55.51	1.8903	12 12 48.8	12.564
2	12 47 34.95	1.7673	1 53 12.4	13.512	2	14 14 49.06	1.8947	12 25 21.4	12.524
3	12 49 21.02	1.7683	2 6 43.1	13.510	3	14 16 42.87	1.8991	12 37 51.6	12.483
4	12 51 7.15	1.7694	2 20 13.6	13.507	4	14 18 36.95	1.9035	12 50 19.4	12.441
5	12 52 53.35	1.7706	2 33 43.9	13.503	5	14 20 31.29	1.9080	13 2 44.7	12.399
6	12 54 39.62	1.7718	2 47 13.9	13.498	6	14 22 25.91	1.9126	13 15 7.3	12.356
7	12 56 25.96	1.7731	3 0 43.6	13.492	7	14 24 20.81	1.9173	13 27 27.3	12.311
8	12 58 12.39	1.7744	3 14 12.9	13.485	8	14 26 15.99	1.9221	13 39 44.6	12.265
9	12 59 58.90	1.7758	3 27 41.8	13.478	9	14 28 11.46	1.9269	13 51 59.2	12.219
10	13 1 45.49	1.7773	3 41 10.3	13.470	10	14 30 7.22	1.9318	14 4 10.9	12.172
11	13 3 32.17	1.7788	3 54 38.3	13.462	11	14 32 3.27	1.9367	14 16 19.7	12.123
12	13 5 18.95	1.7804	4 8 5.7	13.453	12	14 33 59.62	1.9417	14 28 25.6	12.073
13	13 7 5.83	1.7822	4 21 32.5	13.443	13	14 35 56.28	1.9468	14 40 28.5	12.023
14	13 8 52.81	1.7840	4 34 58.8	13.432	14	14 37 53.24	1.9520	14 52 28.3	11.971
15	13 10 39.90	1.7858	4 48 24.4	13.421	15	14 39 50.51	1.9572	15 4 25.0	11.918
16	13 12 27.10	1.7877	5 1 49.3	13.409	16	14 41 48.10	1.9625	15 16 18.5	11.865
17	13 14 14.42	1.7897	5 15 13.4	13.395	17	14 43 46.00	1.9678	15 28 8.8	11.811
18	13 16 1.86	1.7917	5 28 36.7	13.381	18	14 45 44.23	1.9732	15 39 55.8	11.755
19	13 17 49.42	1.7938	5 41 59.2	13.367	19	14 47 42.78	1.9787	15 51 39.4	11.698
20	13 19 37.11	1.7960	5 55 20.8	13.352	20	14 49 41.67	1.9842	16 3 19.6	11.640
21	13 21 24.94	1.7983	6 8 41.4	13.336	21	14 51 40.89	1.9898	16 14 56.3	11.582
22	13 23 12.90	1.8006	6 22 1.1	13.319	22	14 53 40.45	1.9955	16 26 29.4	11.522
23	13 25 1.01	1.8030	6 35 19.7	13.302	23	14 55 40.35	2.0012	16 37 58.8	11.460
24	13 26 49.26	1.8055	S. 6 48 37.3	13.284	24	14 57 40.59	2.0070	S. 16 49 24.6	11.398

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff.* for 1 m.
	h m s	s	° ′ ″	″
0	14 57 40.59	2.0070	S.16 49 24.6	11.398
1	14 59 41.18	2.0128	17 0 46.6	11.335
2	15 1 42.13	2.0187	17 12 4.8	11.270
3	15 3 43.44	2.0247	17 23 19.1	11.205
4	15 5 45.10	2.0308	17 34 29.4	11.139
5	15 7 47.13	2.0369	17 45 35.7	11.072
6	15 9 49.53	2.0431	17 56 38.0	11.003
7	15 11 52.30	2.0493	18 7 36.1	10.933
8	15 13 55.44	2.0555	18 18 29.9	10.862
9	15 15 58.96	2.0618	18 29 19.4	10.789
10	15 18 2.86	2.0682	18 40 4.6	10.715
11	15 20 7.15	2.0747	18 50 45.3	10.640
12	15 22 11.82	2.0812	19 1 21.4	10.564
13	15 24 16.88	2.0877	19 11 53.0	10.487
14	15 26 22.34	2.0943	19 22 19.9	10.409
15	15 28 28.19	2.1009	19 32 42.1	10.329
16	15 30 34.45	2.1076	19 42 59.4	10.248
17	15 32 41.11	2.1143	19 53 11.8	10.166
18	15 34 48.16	2.1210	20 3 19.3	10.083
19	15 36 55.62	2.1278	20 13 21.8	9.998
20	15 39 3.50	2.1347	20 23 19.1	9.912
21	15 41 11.79	2.1416	20 33 11.2	9.824
22	15 43 20.49	2.1485	20 42 58.0	9.735
23	15 45 29.61	2.1555	S.20 52 39.5	9.646

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff.* for 1 m.
0	15 47 39.15	2.1625	S.21 2 15.5	9.555
1	15 49 49.11	2.1695	21 11 46.0	9.462
2	15 51 59.49	2.1766	21 21 11.0	9.368
3	15 54 10.30	2.1837	21 30 30.3	9.273
4	15 56 21.54	2.1908	21 39 43.8	9.176
5	15 58 33.21	2.1980	21 48 51.4	9.078
6	16 0 45.30	2.2052	21 57 53.2	8.979
7	16 2 57.83	2.2124	22 6 49.0	8.878
8	16 5 10.79	2.2196	22 15 38.6	8.776
9	16 7 24.19	2.2269	22 24 22.1	8.673
10	16 9 38.02	2.2342	22 32 59.4	8.569
11	16 11 52.29	2.2415	22 41 30.4	8.463
12	16 14 7.00	2.2488	22 49 54.9	8.355
13	16 16 22.15	2.2562	22 58 12.9	8.246
14	16 18 37.74	2.2635	23 6 24.4	8.135
15	16 20 53.77	2.2708	23 14 29.2	8.023
16	16 23 10.23	2.2781	23 22 27.2	7.910
17	16 25 27.13	2.2854	23 30 18.4	7.796
18	16 27 44.48	2.2927	23 38 2.7	7.680
19	16 30 2.27	2.3001	23 45 40.0	7.563
20	16 32 20.49	2.3074	23 53 10.2	7.444
21	16 34 39.15	2.3148	24 0 33.2	7.323
22	16 36 58.26	2.3221	24 7 48.9	7.201
23	16 39 17.81	2.3294	24 14 57.3	7.078
24	16 41 37.79	2.3367	S.24 21 58.2	6.953

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 41 37.79	2.3367	S.24 21 58.2	6.953
1	16 43 58.21	2.3440	24 28 51.6	6.827
2	16 46 19.07	2.3512	24 35 37.4	6.699
3	16 48 40.36	2.3584	24 42 15.5	6.570
4	16 51 2.08	2.3656	24 48 45.8	6.440
5	16 53 24.24	2.3728	24 55 8.3	6.308
6	16 55 46.82	2.3800	25 1 22.8	6.175
7	16 58 9.83	2.3871	25 7 29.3	6.040
8	17 0 33.27	2.3942	25 13 27.6	5.904
9	17 2 57.13	2.4013	25 19 17.7	5.767
10	17 5 21.42	2.4083	25 24 59.6	5.628
11	17 7 46.13	2.4153	25 30 33.1	5.487
12	17 10 11.25	2.4222	25 35 58.0	5.345
13	17 12 36.79	2.4290	25 41 14.4	5.202
14	17 15 2.73	2.4358	25 46 22.2	5.058
15	17 17 29.08	2.4425	25 51 21.3	4.912
16	17 19 55.83	2.4492	25 56 11.6	4.765
17	17 22 22.98	2.4558	26 0 53.0	4.616
18	17 24 50.53	2.4623	26 5 25.5	4.466
19	17 27 18.47	2.4688	26 9 48.9	4.314
20	17 29 46.79	2.4753	26 14 3.2	4.161
21	17 32 15.50	2.4817	26 18 8.3	4.008
22	17 34 44.59	2.4880	26 22 4.1	3.853
23	17 37 14.05	2.4941	S.26 25 50.6	3.696

MONDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 39 43.88	2.5002	S.26 29 27.6	3.538

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	1	2	29.3
○ Full Moon, . . .	8	1	52.5
☾ Last Quarter, . .	14	16	41.5
● New Moon, . .	22	13	30.5
☽ First Quarter, . .	30	15	48.1

	d	h
☾ Perigee, ...	8	22.8
☾ Apogee, ...	23	18.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	88° 48′ 57″	3224	90° 14′ 38″	3209	91° 40′ 37″	3193	93° 6′ 54″	3178
	Jupiter	W.	63 13 32	2942	64 44 57	2929	66 16 39	2914	67 48 40	2899
	Saturn	E.	80 36 30	2845	79 3 1	2831	77 29 14	2818	75 55 10	2804
	α Aquilæ	E.	82 26 37	3693	81 9 43	3688	79 52 43	3681	78 35 36	3677
2	Sun	W.	100 23 10	3095	101 51 26	3077	103 20 4	3059	104 49 4	3041
	Jupiter	W.	75 33 41	2819	77 7 44	2802	78 42 9	2785	80 16 56	2768
	Spica	W.	28 34 17	2792	30 8 55	2772	31 44 0	2750	33 19 33	2729
	Saturn	E.	68 0 1	2728	66 23 58	2712	64 47 34	2696	63 10 49	2679
	α Aquilæ	E.	72 9 1	3666	70 51 38	3669	69 34 18	3672	68 17 1	3677
	Fomalhaut	E.	100 43 21	2919	99 11 26	2901	97 39 8	2883	96 6 27	2864
3	Sun	W.	112 19 47	2947	113 51 6	2927	115 22 50	2909	116 54 58	2889
	Jupiter	W.	88 16 43	2678	89 53 53	2659	91 31 28	2640	93 9 28	2621
	Spica	W.	41 24 11	2628	43 2 28	2607	44 41 13	2588	46 20 25	2568
	Saturn	E.	55 1 22	2594	53 22 19	2577	51 42 52	2559	50 3 1	2542
	α Aquilæ	E.	61 52 38	3734	60 36 27	3753	59 20 36	3776	58 5 9	3804
	Fomalhaut	E.	88 17 11	2775	86 42 10	2756	85 6 45	2739	83 30 57	2722
	α Pegasi	E.	107 33 52	3019	106 4 3	2995	104 33 44	2970	103 2 54	2946
4	Spica	W.	54 43 16	2469	56 25 13	2449	58 7 38	2430	59 50 30	2410
	Mars	W.	31 20 4	2628	32 58 21	2608	34 37 5	2588	36 16 17	2567
	Saturn	E.	41 37 45	2456	39 55 30	2439	38 12 51	2424	36 29 50	2408
	α Aquilæ	E.	51 56 25	4013	50 44 58	4073	49 34 30	4142	48 25 9	4221
	Fomalhaut	E.	75 26 19	2639	73 48 17	2624	72 9 55	2609	70 31 12	2594
	α Pegasi	E.	95 21 19	2835	93 47 36	2815	92 13 27	2795	90 38 52	2775
5	Spica	W.	68 31 41	2317	70 17 16	2299	72 3 17	2281	73 49 44	2264
	Mars	W.	44 39 7	2471	46 21 1	2452	48 3 22	2433	49 46 9	2416
	Antares	W.	22 39 41	2340	24 24 42	2317	26 10 16	2296	27 56 21	2277
	Fomalhaut	E.	62 13 0	2534	60 32 34	2524	58 51 54	2515	57 11 2	2509
	α Pegasi	E.	82 40 2	2692	81 3 12	2678	79 26 3	2666	77 48 37	2655
6	Spica	W.	82 48 14	2183	84 37 7	2168	86 26 23	2153	88 16 1	2140
	Mars	W.	58 26 14	2333	60 11 26	2317	61 57 1	2302	63 42 57	2288
	Antares	W.	36 53 51	2186	38 42 40	2170	40 31 53	2155	42 21 29	2139
	Fomalhaut	E.	48 45 7	2502	47 3 56	2507	45 22 52	2515	43 42 0	2528
	α Pegasi	E.	69 38 5	2615	67 59 31	2611	66 20 51	2610	64 42 9	2611
	α Arietis	E.	111 15 55	2264	109 29 3	2248	107 41 47	2232	105 54 7	2216
7	Spica	W.	97 29 6	2079	99 20 37	2070	101 12 23	2060	103 4 24	2052
	Mars	W.	72 37 35	2226	74 25 24	2215	76 13 29	2205	78 1 49	2196
	Antares	W.	51 34 46	2076	53 26 22	2065	55 18 15	2055	57 10 23	2046
	α Pegasi	E.	56 30 0	2651	54 52 14	2668	53 14 51	2689	51 37 57	2714
	α Arietis	E.	96 50 19	2150	95 0 36	2140	93 10 38	2130	91 20 25	2120
8	Mars	W.	87 6 31	2162	88 55 56	2157	90 45 29	2153	92 35 7	2150
	Antares	W.	66 34 17	2011	68 27 34	2006	70 20 59	2002	72 14 30	1998
	α Arietis	E.	82 6 14	2088	80 14 57	2085	78 23 35	2082	76 32 8	2081
	Aldebaran	E.	112 28 12	2042	110 35 43	2037	108 43 6	2032	106 50 21	2027
9	Antares	W.	81 42 58	1994	83 36 41	1996	85 30 22	1998	87 24 0	2001
	α Aquilæ	W.	44 46 13	4078	45 56 36	3944	47 9 11	3836	48 23 46	3723
	Saturn	W.	32 14 53	2009	34 8 13	2008	36 1 35	2007	37 54 59	2007
	α Arietis	E.	67 14 46	2086	65 23 26	2092	63 32 14	2098	61 41 11	2103

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	94° 33′ 30″	3162	96° 0′ 25″	3145	97° 27′ 40″	3129	98° 55′ 15″	3112
	Jupiter	W.	69 21 0	2884	70 53 39	2868	72 26 39	2852	73 59 59	2835
	Saturn	E.	74 20 47	2789	72 46 5	2775	71 11 4	2760	69 35 43	2744
	α Aquilæ	E.	77 18 24	3672	76 1 7	3669	74 43 47	3667	73 26 25	3665
2	Sun	W.	106 18 26	3022	107 48 11	3003	109 18 20	2985	110 48 52	2966
	Jupiter	W.	81 52 6	2750	83 27 40	2732	85 3 37	2714	86 39 58	2696
	Spica	W.	34 55 34	2709	36 32 2	2688	38 8 58	2668	39 46 21	2648
	Saturn	E.	61 33 41	2663	59 56 11	2646	58 18 18	2629	56 40 2	2611
	α Aquilæ	E.	66 59 49	3684	65 42 45	3693	64 25 50	3704	63 9 7	3717
	Fomalhaut	E.	94 33 22	2846	92 59 54	2828	91 26 3	2811	89 51 49	2792
3	Sun	W.	118 27 31	2869	120 0 29	2850	121 33 52	2831	123 7 40	2811
	Jupiter	W.	94 47 54	2602	96 26 46	2584	98 6 3	2565	99 45 46	2545
	Spica	W.	48 0 4	2548	49 40 11	2528	51 20 45	2508	53 1 47	2489
	Saturn	E.	48 22 46	2525	46 42 7	2507	45 1 4	2489	43 19 36	2473
	α Aquilæ	E.	56 50 11	3835	55 35 45	3870	54 21 55	3911	53 8 46	3958
	Fomalhaut	E.	81 54 47	2705	80 18 14	2688	78 41 18	2672	77 4 0	2655
	α Pegasi	E.	101 31 33	2922	99 59 42	2900	98 27 23	2877	96 54 35	2855
4	Spica	W.	61 33 50	2391	63 17 37	2372	65 1 52	2354	66 46 33	2335
	Mars	W.	37 55 57	2548	39 36 4	2528	41 16 38	2509	42 57 39	2489
	Saturn	E.	34 46 26	2393	33 2 41	2378	31 18 35	2364	29 34 9	2352
	α Aquilæ	E.	47 17 3	4311	46 10 21	4412	45 5 11	4528	44 1 44	4660
	Fomalhaut	E.	68 52 9	2580	67 12 47	2568	65 33 8	2556	63 53 12	2544
	α Pegasi	E.	89 3 52	2757	87 28 28	2740	85 52 41	2723	84 16 32	2707
5	Spica	W.	75 36 37	2247	77 23 55	2231	79 11 37	2214	80 59 44	2198
	Mars	W.	51 29 21	2398	53 12 58	2382	54 56 59	2364	56 41 25	2348
	Antares	W.	29 42 55	2257	31 29 58	2238	33 17 29	2220	35 5 27	2202
	Fomalhaut	E.	55 30 1	2503	53 48 52	2499	52 7 38	2498	50 26 22	2499
	α Pegasi	E.	76 10 56	2644	74 33 1	2634	72 54 52	2626	71 16 32	2621
6	Spica	W.	90 5 59	2126	91 56 18	2114	93 46 56	2102	95 37 52	2090
	Mars	W.	65 29 14	2274	67 15 51	2262	69 2 47	2249	70 50 2	2237
	Antares	W.	44 11 28	2126	46 1 48	2113	47 52 28	2099	49 43 28	2088
	Fomalhaut	E.	42 1 26	2545	40 21 15	2566	38 41 33	2593	37 2 28	2626
	α Pegasi	E.	63 3 29	2614	61 24 53	2618	59 46 23	2626	58 8 4	2638
	α Arietis	E.	104 6 3	2201	102 17 37	2188	100 28 51	2174	98 39 45	2161
7	Spica	W.	104 56 38	2043	106 49 5	2036	108 41 43	2030	110 34 31	2024
	Mars	W.	79 50 22	2188	81 39 8	2180	83 28 6	2173	85 17 14	2167
	Antares	W.	59 2 46	2037	60 55 22	2030	62 48 10	2023	64 41 9	2017
	α Pegasi	E.	50 1 36	2744	48 25 55	2780	46 51 1	2821	45 17 1	2870
	α Arietis	E.	89 29 57	2112	87 39 16	2105	85 48 25	2099	83 57 24	2093
8	Mars	W.	94 24 50	2148	96 14 36	2146	98 4 25	2145	99 54 15	2145
	Antares	W.	74 8 7	1996	76 1 48	1995	77 55 30	1994	79 49 14	1994
	α Arietis	E.	74 40 39	2080	72 49 9	2080	70 57 39	2081	69 6 11	2083
	Aldebaran	E.	104 57 29	2025	103 4 33	2023	101 11 34	2021	99 18 33	2021
9	Antares	W.	89 17 33	2005	91 11 0	2009	93 4 21	2014	94 57 34	2020
	α Aquilæ	W.	49 40 9	3630	50 58 11	3547	52 17 43	3474	53 38 36	3409
	Saturn	W.	39 48 22	2009	41 41 43	2010	43 35 1	2014	45 28 14	2018
	α Arietis	E.	59 50 17	2111	57 59 35	2121	56 9 8	2132	54 18 57	2143

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Aldebaran	E.	97° 25′ 32″	2021	95° 32′ 31″	2023	93° 39′ 32″	2025	91° 46′ 38″	2028
10	Antares	W.	96 50 37	2026	98 43 30	2033	100 36 12	2041	102 28 42	2050
	α Aquilæ	W.	55 0 42	3351	56 23 53	3302	57 48 2	3258	59 13 3	3218
	Saturn	W.	47 21 20	2023	49 14 18	2029	51 7 7	2036	52 59 45	2043
	α Arietis	E.	52 29 3	2156	50 39 29	2171	48 50 18	2187	47 1 31	2204
	Aldebaran	E.	82 23 32	2054	80 31 22	2061	78 39 23	2070	76 47 37	2078
	Venus	E.	108 35 58	2371	106 51 42	2378	105 7 36	2387	103 23 42	2396
11	α Aquilæ	W.	66 27 51	3092	67 56 10	3078	69 24 47	3066	70 53 38	3058
	Saturn	W.	62 19 44	2090	64 10 59	2101	66 1 56	2113	67 52 35	2125
	Fomalhaut	W.	32 22 40	2750	33 58 13	2701	35 34 51	2662	37 12 22	2631
	Aldebaran	E.	67 32 35	2134	65 42 27	2147	63 52 39	2160	62 3 11	2173
	Venus	E.	94 47 43	2450	93 5 19	2462	91 23 13	2476	89 41 26	2489
	Pollux	E.	111 29 51	2098	109 38 49	2109	107 48 4	2122	105 57 38	2134
12	α Aquilæ	W.	78 19 24	3052	79 48 32	3058	81 17 33	3065	82 46 26	3073
	Saturn	W.	77 1 1	2192	78 49 40	2207	80 37 57	2222	82 25 52	2237
	Fomalhaut	W.	45 28 7	2550	47 8 11	2545	48 48 22	2542	50 28 37	2542
	Aldebaran	E.	53 1 22	2253	51 14 13	2270	49 27 29	2288	47 41 12	2307
	Venus	E.	81 17 32	2565	79 37 49	2582	77 58 29	2598	76 19 31	2615
	Pollux	E.	96 50 25	2203	95 2 2	2217	93 14 0	2232	91 26 20	2247
	Sun	E.	124 49 29	2522	123 8 47	2538	121 28 27	2553	119 48 28	2569
13	Saturn	W.	91 19 48	2315	93 5 26	2331	94 50 40	2347	96 35 31	2364
	α Aquilæ	W.	90 7 36	3139	91 34 58	3156	93 2 0	3175	94 28 39	3196
	Fomalhaut	W.	58 49 15	2563	60 29 1	2570	62 8 37	2579	63 48 1	2588
	α Pegasi	W.	42 23 56	3239	43 49 19	3198	45 15 31	3163	46 42 24	3135
	Aldebaran	E.	38 56 54	2410	37 13 34	2434	35 30 48	2459	33 48 37	2485
	Venus	E.	68 10 36	2704	66 34 1	2722	64 57 50	2740	63 22 3	2759
	Pollux	E.	82 33 44	2326	80 48 22	2342	79 3 24	2358	77 18 49	2375
	Sun	E.	111 33 59	2651	109 56 13	2667	108 18 49	2684	106 41 48	2701
14	Saturn	W.	105 13 54	2445	106 56 25	2460	108 38 34	2477	110 20 19	2493
	Fomalhaut	W.	72 1 26	2646	73 39 19	2658	75 16 55	2671	76 54 14	2684
	α Pegasi	W.	54 3 51	3050	55 33 2	3042	57 2 23	3036	58 31 51	3033
	Venus	E.	55 29 17	2852	53 55 57	2871	52 23 1	2891	50 50 30	2909
	Pollux	E.	68 41 45	2455	66 59 29	2472	65 17 36	2487	63 36 5	2504
	Sun	E.	98 42 26	2788	97 7 42	2804	95 33 19	2821	93 59 19	2838
15	Fomalhaut	W.	84 56 17	2753	86 31 46	2769	88 6 55	2782	89 41 46	2797
	α Pegasi	W.	65 59 42	3035	67 29 11	3039	68 58 35	3044	70 27 53	3051
	Venus	E.	43 13 57	3005	41 43 50	3025	40 14 8	3044	38 44 50	3065
	Pollux	E.	55 14 3	2582	53 34 43	2596	51 55 43	2612	50 17 4	2626
	Sun	E.	86 14 46	2922	84 42 55	2938	83 11 24	2954	81 40 14	2969
16	Fomalhaut	W.	97 31 15	2870	99 4 12	2885	100 36 50	2900	102 9 9	2915
	α Pegasi	W.	77 52 20	3087	79 20 45	3097	80 48 58	3106	82 17 0	3116
	α Arietis	W.	34 22 19	2947	35 53 38	2942	37 25 4	2938	38 56 35	2936
	Venus	E.	31 24 31	3168	29 57 43	3191	28 31 23	3215	27 5 32	3240
	Pollux	E.	42 8 45	2698	40 32 2	2711	38 55 37	2725	37 19 31	2738
	Sun	E.	74 9 13	3046	72 39 57	3060	71 10 59	3074	69 42 18	3089
17	α Pegasi	W.	89 34 6	3168	91 0 53	3181	92 27 25	3193	93 53 43	3204
	α Arietis	W.	46 34 15	2943	48 5 39	2946	49 36 59	2950	51 8 14	2955

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P L. of Diff.
9	Aldebaran	E.	89° 53′ 47″	2031	88° · 1′ 1″	2036	86° 8′ 23″	2041	84° 15′ 53″	2047
10	Antares	W.	104 20 58	2059	106 13 0	2068	108 4 48	2079	109 56 20	2090
	α Aquilæ	W.	60 38 51	3184	62 5 19	3156	63 32 21	3131	64 59 53	3110
	Saturn	W.	54 52 12	2052	56 44 26	2060	58 36 27	2070	60 28 13	2079
	α Arietis	E.	45 13 10	2224	43 25 18	2247	41 38 0	2270	39 51 17	2297
	Aldebaran	E.	74 56 4	2088	73 4 46	2099	71 13 45	2110	69 23 1	2122
	Venus	E.	101 40 1	2405	99 56 34	2415	98 13 21	2426	96 30 24	2438
11	α Aquilæ	W.	72 22 39	3052	73 51 47	3049	75 20 59	3048	76 50 12	3049
	Saturn	W.	69 42 56	2138	71 32 57	2151	73 22 39	2165	75 12 0	2178
	Fomalhaut	W.	38 50 35	2605	40 29 23	2585	42 8 38	2570	43 48 14	2558
	Aldebaran	E.	60 14 3	2188	58 25 17	2204	56 36 55	2219	54 48 56	2236
	Venus	E.	87 59 59	2504	86 18 50	2519	84 38 3	2534	82 57 37	2549
	Pollux	E.	104 7 31	2147	102 17 43	2161	100 28 16	2174	98 39 10	2188
12	α Aquilæ	W.	84 15 9	3083	85 43 39	3095	87 11 55	3108	88 39 55	3124
	Saturn	W.	84 13 25	2252	86 0 35	2267	87 47 23	2283	89 33 47	2299
	Fomalhaut	W.	52 8 52	2543	53 49 6	2545	55 29 16	2550	57 9 20	2556
	Aldebaran	E.	45 55 22	2326	44 10 0	2346	42 25 8	2367	40 40 46	2388
	Venus	E.	74 40 57	2632	73 2 46	2650	71 24 59	2667	69 47 35	2686
	Pollux	E.	89 39 3	2262	87 52 8	2279	86 5 37	2294	84 19 29	2310
	Sun	E.	118 8 50	2585	116 29 34	2601	114 50 40	2617	113 12 8	2634
13	Saturn	W.	98 19 58	2380	100 4 2	2396	101 47 43	2412	103 31 0	2429
	α Aquilæ	W.	95 54 53	3217	97 20 42	3240	98 46 4	3264	100 10 58	3289
	Fomalhaut	W.	65 27 12	2599	67 6 9	2610	68 44 50	2621	70 23 16	2633
	α Pegasi	W.	48 9 51	3110	49 37 48	3090	51 6 10	3073	52 34 52	3060
	Aldebaran	E.	32 7 3	2513	30 26 8	2543	28 45 54	2574	27 6 24	2610
	Venus	E.	61 46 41	2777	60 11 43	2796	58 37 10	2815	57 3 1	2834
	Pollux	E.	75 34 38	2391	73 50 50	2407	72 7 25	2424	70 24 24	2439
	Sun	E.	105 5 10	2719	103 28 55	2735	101 53 2	2753	100 17 32	2771
14	Saturn	W.	112 1 42	2509	113 42 43	2525	115 23 21	2541	117 3 37	2556
	Fomalhaut	W.	78 31 15	2698	80 7 58	2711	81 44 23	2725	83 20 29	2739
	α Pegasi	W.	60 1 23	3030	61 30 58	3030	63 0 34	3030	64 30 9	3032
	Venus	E.	49 18 23	2928	47 46 40	2948	46 15 22	2967	44 44 28	2985
	Pollux	E.	61 54 57	2520	60 14 11	2535	58 33 47	2551	56 53 44	2566
	Sun	E.	92 25 41	2855	90 52 25	2873	89 19 31	2889	87 46 58	2905
15	Fomalhaut	W.	91 16 18	2811	92 50 31	2826	94 24 25	2841	95 58 0	2856
	α Pegasi	W.	71 57 3	3056	73 26 6	3064	74 55 0	3071	76 23 45	3079
	Venus	E.	37 15 57	3084	35 47 28	3105	34 19 24	3125	32 51 45	3146
	Pollux	E.	48 38 45	2641	47 0 46	2656	45 23 7	2670	43 45 47	2684
	Sun	E.	80 9 23	2985	78 38 52	3001	77 8 40	3016	75 38 47	3031
16	Fomalhaut	W.	103 41 9	2930	105 12 50	2946	106 44 11	2961	108 15 13	2975
	α Pegasi	W.	83 44 50	3126	85 12 28	3137	86 39 53	3147	88 7 6	3158
	α Arietis	W.	40 28 8	2935	41 59 42	2035	43 31 16	2938	45 2 47	2940
	Venus	E.	25 40 10	3267	24 15 20	3296	22 51 4	3326	21 27 23	3358
	Pollux	E.	35 43 42	2752	34 8 11	2765	32 32 57	2778	30 58 0	2790
	Sun	E.	68 13 55	3103	66 45 49	3116	65 17 59	3129	63 50 25	3143
17	α Pegasi	W.	95 19 47	3217	96 45 36	3229	98 11 11	3242	99 36 31	3256
	α Arietis	W.	52 39 23	2960	54 10 26	2965	55 41 22	2971	57 12 11	2976

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Sun	E.	62° 23′ 8″	3156	60° 56′ 6″	3168	59° 29′ 19″	3181	58° 2′ 47″	3193
18	α Arietis	W.	58 42 54	2981	60 13 30	2988	61 43 58	2993	63 14 19	2999
	Aldebaran	W.	28 11 22	3016	29 41 15	3013	31 11 12	3010	32 41 12	3009
	Sun	E.	50 53 42	3252	49 28 34	3262	48 3 38	3273	46 38 55	3284
19	α Arietis	W.	70 44 18	3028	72 13 56	3033	73 43 28	3039	75 12 53	3045
	Aldebaran	W.	40 11 14	3015	41 41 8	3018	43 10 59	3021	44 40 46	3024
	Sun	E.	39 38 27	3336	38 14 57	3347	36 51 40	3358	35 28 35	3368
20	α Arietis	W.	82 38 15	3070	84 7 1	3076	85 35 40	3081	87 4 13	3086
	Aldebaran	W.	52 8 40	3041	53 38 2	3045	55 7 19	3048	56 36 32	3052
	Sun	E.	28 36 16	3425	27 14 28	3438	25 52 55	3453	24 31 38	3470
25	Sun	W.	26 46 55	3518	28 6 59	3509	29 27 13	3501	30 47 36	3494
	Mars	E.	58 36 47	3296	57 12 31	3294	55 48 13	3292	54 23 52	3290
	Antares	E.	69 36 10	3077	68 7 32	3075	66 38 52	3073	65 10 9	3070
	Saturn	E.	118 14 3	3067	116 45 13	3065	115 16 20	3062	113 47 24	3060
26	Sun	W.	37 31 29	3460	38 52 38	3453	40 13 55	3446	41 35 20	3439
	Mars	E.	47 21 23	3274	45 56 41	3270	44 31 55	3266	43 7 4	3261
	Antares	E.	57 45 47	3056	56 16 43	3052	54 47 35	3048	53 18 22	3044
	Saturn	E.	106 21 50	3043	104 52 31	3039	103 23 6	3034	101 53 36	3030
	α Aquilæ	E.	105 11 16	3935	103 58 32	3920	102 45 33	3906	101 32 19	3892
27	Sun	W.	48 24 22	3402	49 46 36	3393	51 9 0	3386	52 31 33	3377
	Mars	E.	36 1 19	3234	34 35 50	3227	33 10 13	3220	31 44 28	3213
	Antares	E.	45 50 51	3018	44 21 1	3013	42 51 4	3006	41 20 59	3000
	Saturn	E.	94 24 33	3003	92 54 24	2996	91 24 6	2989	89 53 40	2982
	α Aquilæ	E.	95 22 56	3835	94 8 30	3825	92 53 54	3817	91 39 9	3808
28	Sun	W.	59 26 54	3329	60 50 32	3318	62 14 23	3307	63 38 26	3296
	Antares	E.	33 48 29	2965	32 17 32	2957	30 46 25	2949	29 15 8	2941
	Saturn	E.	82 19 9	2942	80 47 44	2933	79 16 7	2924	77 44 19	2914
	α Aquilæ	E.	85 23 26	3776	84 7 59	3771	82 52 27	3768	81 36 51	3764
29	Sun	W.	70 42 7	3235	72 7 35	3221	73 33 19	3207	74 59 20	3193
	Spica	W.	24 52 56	2927	26 24 40	2907	27 56 48	2891	29 29 19	2873
	Saturn	E.	70 2 3	2861	68 28 54	2849	66 55 30	2837	65 21 50	2825
	α Aquilæ	E.	75 18 16	3761	74 2 33	3762	72 46 51	3765	71 31 12	3770
	Fomalhaut	E.	104 11 46	3050	102 42 35	3036	101 13 7	3022	99 43 21	3006
30	Sun	W.	82 13 44	3118	83 41 32	3101	85 9 40	3085	86 38 8	3068
	Spica	W.	37 17 26	2788	38 52 9	2771	40 27 15	2754	42 2 43	2738
	Saturn	E.	57 29 26	2760	55 54 5	2745	54 18 25	2731	52 42 26	2716
	α Aquilæ	E.	65 14 42	3815	63 59 55	3829	62 45 23	3847	61 31 9	3866
	Fomalhaut	E.	92 9 56	2934	90 38 20	2919	89 6 25	2904	87 34 11	2888
	α Pegasi	E.	111 23 49	3196	109 57 35	3172	108 30 52	3148	107 3 41	3127
31	Sun	W.	94 5 46	2980	95 36 24	2962	97 7 24	2944	98 38 47	2925
	Spica	W.	50 5 42	2650	51 43 29	2632	53 21 40	2615	55 0 15	2596
	Saturn	E.	44 37 38	2642	42 59 40	2626	41 21 21	2611	39 42 41	2596
	α Aquilæ	E.	55 25 59	4014	54 14 33	4055	53 3 48	4103	51 53 49	4158
	Fomalhaut	E.	79 48 10	2814	78 14 0	2798	76 39 30	2784	75 4 41	2770
	α Pegasi	E.	99 41 9	3020	98 11 21	2999	96 41 7	2980	95 10 29	2960

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
17	Sun	E.	56° 36′ 30″	3205	55° 10′ 27″	3217	53° 44′ 38″	3229	52° 19′ 3″	3241
18	α Arietis	W.	64 44 33	3005	66 14 40	3010	67 44 40	3016	69 14 33	3022
	Aldebaran	W.	34 11 14	3009	35 41 16	3009	37 11 17	3010	38 41 17	3013
	Sun	E.	45 14 25	3294	43 50 7	3306	42 26 2	3316	41 2 9	3325
19	α Arietis	W.	76 42 10	3050	78 11 21	3056	79 40 25	3060	81 9 23	3065
	Aldebaran	W.	46 10 29	3027	47 40 8	3030	49 9 43	3034	50 39 14	3038
	Sun	E.	34 5 42	3379	32 43 1	3390	31 20 33	3401	29 58 18	3413
20	α Arietis	W.	88 32 40	3091	90 1 1	3095	91 29 17	3100	92 57 27	3104
	Aldebaran	W.	58 5 41	3055	59 34 46	3058	61 3 47	3061	62 32 44	3065
	Sun	E.	23 10 40	3487	21 50 1	3506	20 29 43	3526	19 9 48	3552
25	Sun	W.	32 8 7	3487	33 28 46	3480	34 49 33	3473	36 10 27	3466
	Mars	E.	52 59 29	3288	51 35 3	3284	50 10 33	3282	48 46 0	3278
	Antares	E.	63 41 23	3068	62 12 34	3065	60 43 42	3062	59 14 46	3060
	Saturn	E.	112 18 25	3056	110 49 22	3054	109 20 16	3050	107 51 5	3047
26	Sun	W.	42 56 52	3432	44 18 32	3425	45 40 20	3417	47 2 17	3410
	Mars	E.	41 42 7	3257	40 17 5	3251	38 51 56	3246	37 26 41	3240
	Antares	E.	51 49 4	3039	50 19 40	3034	48 50 10	3030	47 20 34	3024
	Saturn	E.	100 24 0	3025	98 54 18	3020	97 24 30	3014	95 54 35	3009
	α Aquilæ	E.	100 18 51	3879	99 5 10	3867	97 51 17	3856	96 37 12	3845
27	Sun	W.	53 54 16	3368	55 17 9	3358	56 40 13	3349	58 3 28	3339
	Mars	E.	30 18 34	3205	28 52 31	3198	27 26 19	3189	25 59 57	3182
	Antares	E.	39 50 46	2993	38 20 25	2986	36 49 55	2979	35 19 16	2973
	Saturn	E.	88 23 5	2975	86 52 21	2967	85 21 27	2959	83 50 23	2951
	α Aquilæ	E.	90 24 15	3800	89 9 13	3793	87 54 4	3787	86 38 48	3781
28	Sun	W.	65 2 42	3284	66 27 12	3272	67 51 56	3260	69 16 54	3247
	Antares	E.	27 43 41	2933	26 12 4	2926	24 40 18	2918	23 8 22	2910
	Saturn	E.	76 12 18	2905	74 40 5	2894	73 7 38	2883	71 34 58	2872
	α Aquilæ	E.	80 21 11	3762	79 5 29	3760	77 49 45	3759	76 34 0	3760
29	Sun	W.	76 25 37	3179	77 52 11	3163	79 19 4	3148	80 46 15	3133
	Spica	W.	31 2 12	2856	32 35 27	2838	34 9 5	2821	35 43 5	2805
	Saturn	E.	63 47 55	2812	62 13 43	2800	60 39 15	2786	59 4 29	2773
	α Aquilæ	E.	70 15 39	3776	69 0 12	3783	67 44 52	3792	66 29 41	3803
	Fomalhaut	E.	98 13 16	2992	96 42 53	2978	95 12 13	2963	93 41 14	2948
30	Sun	W.	88 6 57	3051	89 36 7	3034	91 5 38	3016	92 35 31	2998
	Spica	W.	43 38 32	2721	45 14 44	2703	46 51 20	2686	48 28 19	2668
	Saturn	E.	51 6 8	2701	49 29 30	2687	47 52 33	2672	46 15 16	2657
	α Aquilæ	E.	60 17 15	3889	59 3 44	3914	57 50 38	3943	56 38 2	3976
	Fomalhaut	E.	86 1 37	2873	84 28 44	2859	82 55 32	2844	81 22 1	2828
	α Pegasi	E.	105 36 4	3105	104 8 0	3082	102 39 29	3061	101 10 32	3040
31	Sun	W.	100 10 34	2906	101 42 45	2887	103 15 21	2867	104 48 22	2848
	Spica	W.	56 39 15	2578	58 18 40	2560	59 58 30	2541	61 38 46	2522
	Saturn	E.	38 3 41	2581	36 24 20	2566	34 44 39	2552	33 4 38	2538
	α Aquilæ	E.	50 44 43	4218	49 36 34	4287	48 29 29	4364	47 23 35	4450
	Fomalhaut	E.	73 29 34	2756	71 54 8	2742	70 18 24	2728	68 42 21	2714
	α Pegasi	E.	93 39 26	2941	92 7 59	2923	90 36 9	2905	89 3 56	2887

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	10 42 40.22	9.068	N. 8 10 28.5	54.58	15 53.84	64.41	0 11.96	0.786
Tues.	2	10 46 17.69	9.056	7 48 34.8	54.90	15 54.08	64.37	0 30.99	0.799
Wed.	3	10 49 54.88	9.044	7 26 33.9	55.20	15 54.32	64.33	0 50.29	0.810
Thur.	4	10 53 31.80	9.033	7 4 25.9	55.49	15 54.56	64.29	1 9.88	0.821
Frid.	5	10 57 8.47	9.024	6 42 10.8	55.77	15 54.81	64.26	1 29.71	0.830
Sat.	6	11 0 44.92	9.015	6 19 49.2	56.04	15 55.05	64.23	1 49.77	0.839
Sun.	7	11 4 21.16	9.006	5 57 21.3	56.30	15 55.30	64.20	2 10.02	0.848
Mon.	8	11 7 57.22	8.999	5 34 47.6	56.53	15 55.54	64.17	2 30.46	0.855
Tues.	9	11 11 33.12	8.993	5 12 8.1	56.75	15 55.79	64.14	2 51.07	0.861
Wed.	10	11 15 8.89	8.988	4 49 23.3	56.98	15 56.04	64.12	3 11.79	0.866
Thur.	11	11 18 44.54	8.983	4 26 33.6	57.17	15 56.29	64.11	3 32.63	0.871
Frid.	12	11 22 20.09	8.979	4 3 39.2	57.37	15 56.54	64.10	3 53.58	0.875
Sat.	13	11 25 55.57	8.976	3 40 40.3	57.54	15 56.79	64.09	4 14.59	0.878
Sun.	14	11 29 31.00	8.975	3 17 37.3	57.70	15 57.04	64.08	4 35.86	0.879
Mon.	15	11 33 6.39	8.974	2 54 30.6	57.85	15 57.30	64.07	4 56.77	0.880
Tues.	16	11 36 41.76	8.974	2 31 20.3	57.99	15 57.55	64.06	5 17.89	0.880
Wed.	17	11 40 17.14	8.975	2 8 6.9	58.12	15 57.81	64.06	5 39.01	0.879
Thur.	18	11 43 52.56	8.977	1 44 50.8	58.22	15 58.07	64.06	6 0.08	0.877
Frid.	19	11 47 28.01	8.978	1 21 32.2	58.32	15 58.33	64.07	6 21.12	0.876
Sat.	20	11 51 3.51	8.981	0 58 11.5	58.39	15 58.59	64.08	6 42.11	0.873
Sun.	21	11 54 39.09	8.984	0 34 49.2	58.45	15 58.86	64.09	7 3.03	0.870
Mon.	22	11 58 14.76	8.989	N. 0 11 25.5	58.50	15 59.13	64.11	7 23.86	0.865
Tues.	23	12 1 50.55	8.994	S. 0 11 59.1	58.54	15 59.41	64.13	7 44.57	0.860
Wed.	24	12 5 26.46	9.000	0 35 24.4	58.55	15 59.68	64.15	8 5.16	0.854
Thur.	25	12 9 2.52	9.007	0 58 49.8	58.55	15 59.96	64.17	8 25.59	0.847
Frid.	26	12 12 38.74	9.014	1 22 15.2	58.54	16 0.24	64.20	8 45.87	0.840
Sat.	27	12 16 15.12	9.021	1 45 39.9	58.51	16 0.52	64.23	9 5.99	0.833
Sun.	28	12 19 51.70	9.030	2 9 3.7	58.46	16 0.80	64.26	9 25.90	0.824
Mon.	29	12 23 28.51	9.039	2 32 26.4	58.41	16 1.08	64.30	9 45.59	0.815
Tues.	30	12 27 5.56	9.049	2 55 47.5	58.33	16 1.36	64.34	10 5.05	0.805
Wed.	31	12 30 42.87	9.060	S. 3 19 6.5	58.24	16 1.64	64.39	10 24.24	0.794

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	10 42 40.23	9.070	N. 8 10 28.5	54.59	0 11.96	0.786	10 42 52.19
Tues.	2	10 46 17.75	9.058	7 48 34.5	54.91	0 31.00	0.799	10 46 48.75
Wed.	3	10 49 54.99	9.046	7 26 33.3	55.21	0 50.31	0.810	10 50 45.30
Thur.	4	10 53 31.96	9.035	7 4 24.9	55.50	1 9.90	0.821	10 54 41.86
Frid.	5	10 57 8.68	9.026	6 42 9.5	55.77	1 29.73	0.830	10 58 38.41
Sat.	6	11 0 45.18	9.017	6 19 47.6	56.05	1 49.79	0.839	11 2 34.97
Sun.	7	11 4 21.47	9.008	5 57 19.4	56.31	2 10.05	0.848	11 6 31.52
Mon.	8	11 7 57.58	9.001	5 34 45.3	56.54	2 30.49	0.855	11 10 28.07
Tues.	9	11 11 33.53	8.995	5 12 5.5	56.76	2 51.10	0.861	11 14 24.63
Wed.	10	11 15 9.35	8.990	4 49 20.5	56.99	3 11.83	0.866	11 18 21.18
Thur.	11	11 18 45.05	8.985	4 26 30.4	57.19	3 32.68	0.871	11 22 17.73
Frid.	12	11 22 20.65	8.981	4 3 35.6	57.39	3 53.64	0.875	11 26 14.29
Sat.	13	11 25 56.18	8.978	3 40 36.3	57.56	4 14.66	0.878	11 30 10.84
Sun.	14	11 29 31.66	8.977	3 17 33.0	57.72	4 35.73	0.879	11 34 7.39
Mon.	15	11 33 7.11	8.976	2 54 25.9	57.87	4 56.84	0.880	11 38 3.95
Tues.	16	11 36 42.54	8.976	2 31 15.3	58.01	5 17.96	0.880	11 42 0.50
Wed.	17	11 40 17.97	8.977	2 8 1.5	58.14	5 39.09	0.879	11 45 57.06
Thur.	18	11 43 53.44	8.979	1 44 45.0	58.24	6 0.17	0.877	11 49 53.61
Frid.	19	11 47 28.94	8.980	1 21 26.1	58.34	6 21.22	0.876	11 53 50.16
Sat.	20	11 51 4.50	8.982	0 58 5.1	58.41	6 42.21	0.873	11 57 46.71
Sun.	21	11 54 40.13	8.986	0 34 42.4	58.47	7 3.14	0.870	12 1 43.27
Mon.	22	11 58 15.85	8.991	N. 0 11 18.4	58.52	7 23.97	0.865	12 5 39.82
Tues.	23	12 1 51.69	8.996	S. 0 12 6.5	58.56	7 44.68	0.860	12 9 36.37
Wed.	24	12 5 27.66	9.002	0 35 32.2	58.57	8 5.27	0.854	12 13 32.93
Thur.	25	12 9 3.77	9.009	0 58 58.0	58.57	8 25.71	0.847	12 17 29.48
Frid.	26	12 12 40.04	9.016	1 22 23.7	58.56	8 45.99	0.840	12 21 26.03
Sat.	27	12 16 16.47	9.023	1 45 48.7	58.53	9 6.12	0.833	12 25 22.59
Sun.	28	12 19 53.11	9.032	2 9 12.8	58.48	9 26.03	0.824	12 29 19.14
Mon.	29	12 23 29.97	9.041	2 32 35.8	58.43	9 45.72	0.815	12 33 15.69
Tues.	30	12 27 7.07	9.051	2 55 57.2	58.35	10 5.18	0.805	12 37 12.25
Wed.	31	12 30 44.43	9.062	S. 3 19 16.6	58.25	10 24.37	0.794	12 41 8.80

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour.
$+9^{s}.8565$

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	244	159 4 37.1	4 15.4	145.30	−0.46	0.0036975	−45.1	13 14 57.21
2	245	160 2 45.2	2 23.4	145.36	0.55	.0035887	45.4	13 11 1.30
3	246	161 0 54.8	0 33.0	145.42	0.61	.0034792	45.7	13 7 5.39
4	247	161 59 5.9	58 43.9	145.49	0.63	.0033691	46.0	13 3 9.48
5	248	162 57 18.6	56 56.5	145.56	0.62	.0032584	46.2	12 59 13.57
6	249	163 55 33.0	55 10.8	145.63	0.58	.0031472	46.4	12 55 17.66
7	250	164 53 49.1	53 26.8	145.71	0.52	.0030357	46.5	12 51 21.75
8	251	165 52 7.0	51 44.5	145.79	0.42	.0029238	46.7	12 47 25.85
9	252	166 50 26.9	50 4.3	145.87	0.32	.0028116	46.8	12 43 29.95
10	253	167 48 48.8	48 26.1	145.95	0.19	.0026991	46.9	12 39 34.03
11	254	168 47 12.7	46 49.9	146.04	−0.06	.0025862	47.1	12 35 38.12
12	255	169 45 38.6	45 15.7	146.12	+0.08	.0024729	47.3	12 31 42.22
13	256	170 44 6.6	43 43.6	146.21	0.21	.0023590	47.6	12 27 46.31
14	257	171 42 36.9	42 13.8	146.30	0.33	.0022445	47.9	12 23 50.40
15	258	172 41 9.4	40 46.2	146.40	0.43	.0021293	48.2	12 19 54.49
16	259	173 39 44.1	39 20.8	146.49	0.51	.0020132	48.6	12 15 58.58
17	260	174 38 21.1	37 57.7	146.58	0.56	.0018962	49.0	12 12 2.67
18	261	175 37 0.1	36 36.5	146.67	0.58	.0017780	49.4	12 8 6.76
19	262	176 35 41.3	35 17.6	146.76	0.56	.0016590	49.9	12 4 10.85
20	263	177 34 24.5	34 0.7	146.85	0.51	.0015389	50.3	12 0 14.95
21	264	178 33 9.8	32 45.9	146.93	0.44	.0014177	50.7	11 56 19.05
22	265	179 31 57.0	31 33.0	147.01	0.34	.0012954	51.1	11 52 23.14
23	266	180 30 46.2	30 22.1	147.09	0.23	.0011720	51.5	11 48 27.23
24	267	181 29 37.3	29 13.1	147.17	+0.11	.0010477	51.9	11 44 31.33
25	268	182 28 30.3	28 6.0	147.24	−0.02	.0009225	52.2	11 40 35.42
26	269	183 27 25.1	27 0.7	147.32	0.15	.0007966	52.5	11 36 39.51
27	270	184 26 21.6	25 57.1	147.39	0.26	.0006700	52.8	11 32 43.60
28	271	185 25 19.9	24 55.2	147.47	0.37	.0005429	53.1	11 28 47.70
29	272	186 24 20.0	23 55.2	147.54	0.46	.0004155	53.1	11 24 51.79
30	273	187 23 21.8	22 56.9	147.62	0.52	.0002880	53.1	11 20 55.88
31	274	188 22 25.3	22 0.3	147.69	−0.55	0.0001605	−53.1	11 16 59.98

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
—9^{s}.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 48.5	15 56.3	57 54.6	+2.35	58 23.1	+2.39	7 13.9	2.48	9.4
2	16 4.1	16 11.8	58 51.7	2.38	59 19.9	2.31	8 14.7	2.58	10.4
3	16 19.1	16 25.9	59 46.9	2.18	60 12.0	1.99	9 16.8	2.58	11.4
4	16 32.0	16 37.2	60 34.4	1.74	60 53.6	1.45	10 17.9	2.49	12.4
5	16 41.4	16 44.4	61 8.9	1.10	61 19.8	+0.71	11 16.3	2.37	13.4
6	16 46.0	16 46.3	61 25.8	+0.29	61 26.8	−0.13	12 11.7	2.25	14.4
7	16 45.2	16 42.7	61 22.7	−0.55	61 13.6	0.95	13 4.6	2.16	15.4
8	16 39.0	16 34.1	60 59.8	1.32	60 41.9	1.65	13 56.0	2.13	16.4
9	16 28.2	16 21.6	60 20.5	1.92	59 56.1	2.13	14 47.1	2.14	17.4
10	16 14.4	16 6.8	59 29.5	2.28	59 1.5	2.37	15 38.9	2.18	18.4
11	15 59.0	15 51.1	58 32.8	2.41	58 4.0	2.39	16 31.9	2.24	19.4
12	15 43.4	15 35.9	57 35.6	2.33	57 8.1	2.23	17 26.1	2.28	20.4
13	15 28.8	15 22.1	56 42.0	2.11	56 17.6	1.97	18 20.9	2.28	21.4
14	15 15.9	15 10.3	55 54.9	1.81	55 34.2	1.64	19 15.0	2.23	22.4
15	15 5.2	15 0.7	55 15.5	1.47	54 58.9	1.30	20 7.3	2.13	23.4
16	14 56.7	14 53.3	54 44.4	1.12	54 32.0	0.95	20 57.0	2.01	24.4
17	14 50.5	14 48.2	54 21.5	0.79	54 13.0	0.63	21 43.6	1.88	25.4
18	14 46.4	14 45.0	54 6.3	0.48	54 1.4	0.34	22 27.5	1.77	26.4
19	14 44.1	14 43.7	53 58.1	−0.20	53 56.5	−0.07	23 9.1	1.69	27.4
20	14 43.7	14 44.0	53 56.3	+0.05	53 57.5	+0.16	23 49.2	1.65	28.4
21	14 44.7	14 45.7	54 0.0	0.26	54 3.8	0.37	☌		29.4
22	14 47.1	14 48.8	54 8.9	0.47	54 15.2	0.58	0 28.7	1.64	0.8
23	14 50.9	14 53.3	54 22.7	0.68	54 31.6	0.79	1 8.5	1.68	1.8
24	14 56.0	14 59.1	54 41.8	0.91	54 53.3	1.02	1 49.6	1.76	2.8
25	15 2.7	15 6.6	55 6.3	1.14	55 20.7	1.26	2 33.1	1.87	3.8
26	15 10.9	15 15.7	55 36.5	1.38	55 53.8	1.50	3 19.8	2.03	4.8
27	15 20.8	15 26.3	56 12.6	1.62	56 32.8	1.74	4 10.4	2.20	5.8
28	15 32.1	15 38.3	56 54.4	1.85	57 17.2	1.94	5 5.0	2.36	6.8
29	15 44.8	15 51.5	57 41.0	2.02	58 5.5	2.07	6 2.9	2.46	7.8
30	15 58.3	16 5.1	58 30.5	2.09	58 55.6	2.07	7 2.6	2.49	8.8
31	16 11.8	16 18.2	59 20.1	+2.01	59 43.7	+1.90	8 2.1	2.45	9.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 1.					WEDNESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 39 43.88	2.5002	S.26 29 27.6	3.538	0	19 44 33.72	2.6481	S.25 58 32.3	5.066
1	17 42 14.07	2.5062	26 32 55.1	3.378	1	19 47 12.59	2.6476	25 53 22.7	5.254
2	17 44 44.62	2.5121	26 36 13.0	3.218	2	19 49 51.43	2.6470	25 48 1.8	5.441
3	17 47 15.52	2.5179	26 39 21.3	3.057	3	19 52 30.23	2.6463	25 42 29.7	5.628
4	17 49 46.77	2.5236	26 42 19.8	2.894	4	19 55 8.98	2.6454	25 36 46.5	5.814
5	17 52 18.36	2.5293	26 45 8.5	2.729	5	19 57 47.67	2.6443	25 30 52.1	6.000
6	17 54 50.28	2.5348	26 47 47.3	2.564	6	20 0 26.29	2.6431	25 24 46.5	6.185
7	17 57 22.53	2.5403	26 50 16.1	2.398	7	20 3 4.84	2.6418	25 18 29.8	6.370
8	17 59 55.11	2.5456	26 52 35.0	2.231	8	20 5 43.31	2.6404	25 12 2.1	6.554
9	18 2 28.00	2.5508	26 54 43.8	2.062	9	20 8 21.69	2.6388	25 5 23.3	6.738
10	18 5 1.20	2.5559	26 56 42.4	1.892	10	20 10 59.96	2.6370	24 58 33.5	6.921
11	18 7 34.70	2.5608	26 58 30.8	1.722	11	20 13 38.12	2.6351	24 51 32.7	7.104
12	18 10 8.50	2.5656	27 0 9.0	1.550	12	20 16 16.17	2.6331	24 44 21.0	7.286
13	18 12 42.59	2.5704	27 1 36.8	1.377	13	20 18 54.09	2.6310	24 36 58.5	7.466
14	18 15 16.95	2.5751	27 2 54.2	1.203	14	20 21 31.89	2.6288	24 29 25.1	7.646
15	18 17 51.59	2.5796	27 4 1.2	1.029	15	20 24 9.55	2.6264	24 21 40.9	7.826
16	18 20 26.50	2.5840	27 4 57.7	0.854	16	20 26 47.06	2.6239	24 13 46.0	8.004
17	18 23 1.67	2.5882	27 5 43.6	0.677	17	20 29 24.42	2.6213	24 5 40.4	8.182
18	18 25 37.08	2.5923	27 6 18.9	0.499	18	20 32 1.62	2.6186	23 57 24.2	8.358
19	18 28 12.74	2.5963	27 6 43.5	0.321	19	20 34 38.65	2.6158	23 48 57.4	8.534
20	18 30 48.63	2.6001	27 6 57.4	−0.141	20	20 37 15.51	2.6129	23 40 20.1	8.708
21	18 33 24.75	2.6038	27 7 0.6	+0.038	21	20 39 52.19	2.6098	23 31 32.4	8.882
22	18 36 1.09	2.6074	27 6 52.9	0.219	22	20 42 28.68	2.6066	23 22 34.3	9.054
23	18 38 37.64	2.6108	S.27 6 34.3	0.401	23	20 45 4.98	2.6034	S.23 13 25.9	9.225
	TUESDAY 2.					THURSDAY 4.			
0	18 41 14.39	2.6141	S.27 6 4.8	0.583	0	20 47 41.09	2.6001	S.23 4 7.3	9.395
1	18 43 51.33	2.6173	27 5 24.4	0.765	1	20 50 16.99	2.5966	22 54 38.5	9.565
2	18 46 28.46	2.6203	27 4 33.0	0.948	2	20 52 52.68	2.5931	22 44 59.5	9.733
3	18 49 5.77	2.6232	27 3 30.6	1.132	3	20 55 28.16	2.5895	22 35 10.6	9.900
4	18 51 43.24	2.6259	27 2 17.1	1.317	4	20 58 3.42	2.5858	22 25 11.7	10.065
5	18 54 20.87	2.6284	27 0 52.5	1.502	5	21 0 38.45	2.5820	22 15 2.9	10.229
6	18 56 58.65	2.6308	26 59 16.8	1.688	6	21 3 13.26	2.5782	22 4 44.4	10.391
7	18 59 36.57	2.6331	26 57 29.9	1.874	7	21 5 47.83	2.5743	21 54 16.2	10.552
8	19 2 14.62	2.6352	26 55 31.9	2.060	8	21 8 22.17	2.5703	21 43 38.4	10.712
9	19 4 52.79	2.6371	26 53 22.7	2.247	9	21 10 56.26	2.5662	21 32 51.0	10.870
10	19 7 31.07	2.6389	26 51 2.3	2.434	10	21 13 30.11	2.5620	21 21 54.2	11.025
11	19 10 9.46	2.6406	26 48 30.6	2.622	11	21 16 3.71	2.5578	21 10 48.0	11.180
12	19 12 47.94	2.6421	26 45 47.7	2.809	12	21 18 37.05	2.5535	20 59 32.6	11.334
13	19 15 26.51	2.6434	26 42 53.5	2.997	13	21 21 10.14	2.5492	20 48 8.0	11.486
14	19 18 5.15	2.6446	26 39 48.1	3.185	14	21 23 42.96	2.5448	20 36 34.3	11.636
15	19 20 43.86	2.6456	26 36 31.4	3.373	15	21 26 15.52	2.5404	20 24 51.7	11.784
16	19 23 22.62	2.6465	26 33 3.3	3.561	16	21 28 47.81	2.5359	20 13 0.2	11.931
17	19 26 1.43	2.6473	26 29 23.9	3.750	17	21 31 19.83	2.5314	20 0 59.9	12.077
18	19 28 40.29	2.6479	26 25 33.3	3.938	18	21 33 51.58	2.5268	19 48 51.0	12.221
19	19 31 19.18	2.6483	26 21 31.4	4.127	19	21 36 23.05	2.5222	19 36 33.5	12.363
20	19 33 58.08	2.6485	26 17 18.1	4.315	20	21 38 54.25	2.5176	19 24 7.5	12.503
21	19 36 36.99	2.6486	26 12 53.5	4.503	21	21 41 25.17	2.5129	19 11 33.2	12.641
22	19 39 15.91	2.6486	26 8 17.7	4.691	22	21 43 55.80	2.5082	18 58 50.6	12.777
23	19 41 54.82	2.6484	26 3 30.6	4.878	23	21 46 26.15	2.5035	18 45 59.9	12.912
24	19 44 33.72	2.6481	S.25 58 32.3	5.066	24	21 48 56.22	2.4987	S.18 33 1.2	13.045

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 5.					SUNDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 48 56.22	2.4987	S. 18 33 1.2	13.045	0	23 43 33.82	2.2905	S. 6 11 56.5	17.023
1	21 51 26.00	2.4939	18 19 54.6	13.176	1	23 45 51.15	2.2873	5 54 54.2	17.053
2	21 53 55.49	2.4892	18 6 40.1	13.305	2	23 48 8.29	2.2842	5 37 50.1	17.081
3	21 56 24.70	2.4844	17 53 17.9	13.433	3	23 50 25.25	2.2812	5 20 44.3	17.108
4	21 58 53.62	2.4796	17 39 48.2	13.559	4	23 52 42.03	2.2782	5 3 37.1	17.132
5	22 1 22.25	2.4747	17 26 11.0	13.682	5	23 54 58.63	2.2753	4 46 28.5	17.154
6	22 3 50.59	2.4699	17 12 26.4	13.803	6	23 57 15.06	2.2725	4 29 18.6	17.174
7	22 6 18.63	2.4650	16 58 34.6	13.923	7	23 59 31.32	2.2697	4 12 7.5	17.193
8	22 8 46.39	2.4602	16 44 35.7	14.041	8	0 1 47.42	2.2670	3 54 55.4	17.209
9	22 11 13.86	2.4554	16 30 29.8	14.156	9	0 4 3.36	2.2643	3 37 42.4	17.223
10	22 13 41.04	2.4506	16 16 17.0	14.269	10	0 6 19.14	2.2617	3 20 28.6	17.235
11	22 16 7.93	2.4458	16 1 57.5	14.381	11	0 8 34.77	2.2593	3 3 14.2	17.244
12	22 18 34.53	2.4410	15 47 31.3	14.491	12	0 10 50.26	2.2570	2 45 59.3	17.252
13	22 21 0.84	2.4361	15 32 58.6	14.598	13	0 13 5.61	2.2547	2 28 44.0	17.258
14	22 23 26.86	2.4313	15 18 19.5	14.703	14	0 15 20.82	2.2524	2 11 28.3	17.262
15	22 25 52.59	2.4265	15 3 34.2	14.807	15	0 17 35.90	2.2502	1 54 12.5	17.263
16	22 28 18.04	2.4218	14 48 42.7	14.909	16	0 19 50.84	2.2481	1 36 56.7	17.263
17	22 30 43.21	2.4171	14 33 45.2	15.008	17	0 22 5.66	2.2460	1 19 41.0	17.261
18	22 33 8.09	2.4124	14 18 41.8	15.105	18	0 24 20.36	2.2440	1 2 25.4	17.257
19	22 35 32.69	2.4077	14 3 32.6	15.200	19	0 26 34.95	2.2422	0 45 10.1	17.251
20	22 37 57.01	2.4030	13 48 17.8	15.293	20	0 28 49.42	2.2404	0 27 55.3	17.243
21	22 40 21.05	2.3984	13 32 57.5	15.383	21	0 31 3.78	2.2386	S. 0 10 41.0	17.233
22	22 42 44.82	2.3938	13 17 31.8	15.471	22	0 33 18.05	2.2369	N. 0 6 32.6	17.221
23	22 45 8.31	2.3892	S. 13 2 0.9	15.558	23	0 35 32.22	2.2354	N. 0 23 45.4	17.206
	SATURDAY 6.					MONDAY 8.			
0	22 47 31.52	2.3847	S. 12 46 24.8	15.643	0	0 37 46.30	2.2339	N. 0 40 57.3	17.190
1	22 49 54.46	2.3802	12 30 43.7	15.725	1	0 40 0.29	2.2324	0 58 8.2	17.172
2	22 52 17.14	2.3757	12 14 57.8	15.805	2	0 42 14.19	2.2310	1 15 18.0	17.152
3	22 54 39.55	2.3713	11 59 7.1	15.883	3	0 44 28.01	2.2297	1 32 26.5	17.131
4	22 57 1.69	2.3669	11 43 11.8	15.959	4	0 46 41.76	2.2285	1 49 33.7	17.108
5	22 59 23.57	2.3626	11 27 12.0	16.033	5	0 48 55.43	2.2273	2 6 39.4	17.082
6	23 1 45.20	2.3583	11 11 7.9	16.104	6	0 51 9.04	2.2262	2 23 43.5	17.055
7	23 4 6.57	2.3541	10 54 59.6	16.173	7	0 53 22.59	2.2253	2 40 45.9	17.026
8	23 6 27.69	2.3499	10 38 47.1	16.240	8	0 55 36.08	2.2244	2 57 46.6	16.996
9	23 8 48.56	2.3458	10 22 30.7	16.305	9	0 57 49.52	2.2236	3 14 45.4	16.963
10	23 11 9.18	2.3417	10 6 10.5	16.368	10	1 0 2.91	2.2228	3 31 42.1	16.928
11	23 13 29.56	2.3376	9 49 46.6	16.429	11	1 2 16.25	2.2220	3 48 36.7	16.891
12	23 15 49.69	2.3336	9 33 19.0	16.488	12	1 4 29.55	2.2213	4 5 29.0	16.853
13	23 18 9.59	2.3297	9 16 48.0	16.544	13	1 6 42.82	2.2208	4 22 19.0	16.813
14	23 20 29.25	2.3258	9 0 13.7	16.598	14	1 8 56.05	2.2203	4 39 6.6	16.771
15	23 22 48.68	2.3220	8 43 36.2	16.650	15	1 11 9.25	2.2199	4 55 51.6	16.728
16	23 25 7.89	2.3183	8 26 55.7	16.700	16	1 13 22.44	2.2196	5 12 34.0	16.683
17	23 27 26.87	2.3146	8 10 12.2	16.748	17	1 15 35.61	2.2193	5 29 13.7	16.637
18	23 29 45.64	2.3109	7 53 25.9	16.794	18	1 17 48.76	2.2191	5 45 50.5	16.589
19	23 32 4.19	2.3073	7 36 36.9	16.838	19	1 20 1.90	2.2189	6 2 24.3	16.538
20	23 34 22.52	2.3038	7 19 45.4	16.879	20	1 22 15.03	2.2188	6 18 55.1	16.486
21	23 36 40.65	2.3004	7 2 51.5	16.918	21	1 24 28.16	2.2188	6 35 22.7	16.432
22	23 38 58.57	2.2971	6 45 55.3	16.955	22	1 26 41.29	2.2189	6 51 47.0	16.377
23	23 41 16.29	2.2938	6 28 56.9	16.990	23	1 28 54.43	2.2190	7 8 7.9	16.320
24	23 43 33.82	2.2905	S. 6 11 56.5	17.023	24	1 31 7.57	2.2191	N. 7 24 25.4	16.262

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 9.					THURSDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 31 7.57	2.2191	N. 7 24 25.4	16.262	0	3 18 52.29	2.2856	N.18 49 56.8	11.806
1	1 33 20.72	2.2193	7 40 39.3	16.202	1	3 21 9.49	2.2877	19 1 41.5	11.684
2	1 35 33.89	2.2197	7 56 49.6	16.140	2	3 23 26.81	2.2897	19 13 18.9	11.561
3	1 37 47.08	2.2201	8 12 56.1	16.077	3	3 25 44.26	2.2918	19 24 48.9	11.438
4	1 40 0.30	2.2205	8 28 58.8	16.012	4	3 28 1.83	2.2939	19 36 11.5	11.314
5	1 42 13.54	2.2210	8 44 57.6	15.946	5	3 30 19.53	2.2960	19 47 26.6	11.188
6	1 44 26.82	2.2216	9 0 52.3	15.878	6	3 32 37.35	2.2981	19 58 34.1	11.062
7	1 46 40.13	2.2222	9 16 42.9	15.808	7	3 34 55.30	2.3002	20 9 34.0	10.935
8	1 48 53.48	2.2229	9 32 29.3	15.737	8	3 37 13.38	2.3023	20 20 26.3	10.807
9	1 51 6.87	2.2236	9 48 11.4	15.665	9	3 39 31.58	2.3044	20 31 10.9	10.679
10	1 53 20.31	2.2244	10 3 49.1	15.591	10	3 41 49.91	2.3065	20 41 47.8	10.550
11	1 55 33.80	2.2252	10 19 22.3	15.515	11	3 44 8.36	2.3085	20 52 16.9	10.419
12	1 57 47.33	2.2261	10 34 50.9	15.438	12	3 46 26.93	2.3106	21 2 38.1	10.288
13	2 0 0.92	2.2270	10 50 14.9	15.360	13	3 48 45.62	2.3126	21 12 51.4	10.156
14	2 2 14.57	2.2281	11 5 34.1	15.280	14	3 51 4.44	2.3146	21 22 56.8	10.023
15	2 4 28.29	2.2292	11 20 48.5	15.198	15	3 53 23.38	2.3166	21 32 54.2	9.890
16	2 6 42.07	2.2303	11 35 57.9	15.115	16	3 55 42.43	2.3186	21 42 43.6	9.756
17	2 8 55.92	2.2314	11 51 2.3	15.032	17	3 58 1.60	2.3205	21 52 24.9	9.620
18	2 11 9.84	2.2326	12 6 1.7	14.947	18	4 0 20.89	2.3224	22 1 58.0	9.484
19	2 13 23.84	2.2339	12 20 55.9	14.860	19	4 2 40.29	2.3243	22 11 23.0	9.348
20	2 15 37.91	2.2352	12 35 44.9	14.772	20	4 4 59.81	2.3262	22 20 39.8	9.211
21	2 17 52.06	2.2365	12 50 28.5	14.682	21	4 7 19.44	2.3281	22 29 48.3	9.073
22	2 20 6.29	2.2379	13 5 6.7	14.591	22	4 9 39.18	2.3299	22 38 48.6	8.935
23	2 22 20.61	2.2393	N.13 19 39.4	14.499	23	4 11 59.03	2.3317	N.22 47 40.6	8.797
	WEDNESDAY 10.					FRIDAY 12.			
0	2 24 35.01	2.2408	N.13 34 6.6	14.406	0	4 14 18.99	2.3335	N.22 56 24.2	8.658
1	2 26 49.50	2.2423	13 48 28.1	14.311	1	4 16 39.05	2.3352	23 4 59.4	8.517
2	2 29 4.09	2.2439	14 2 43.9	14.215	2	4 18 59.21	2.3369	23 13 26.2	8.376
3	2 31 18.77	2.2455	14 16 53.9	14.117	3	4 21 19.48	2.3386	23 21 44.5	8.235
4	2 33 33.55	2.2471	14 30 58.0	14.018	4	4 23 49.84	2.3402	23 29 54.4	8.093
5	2 35 48.43	2.2488	14 44 56.1	13.918	5	4 26 0.30	2.3418	23 37 55.7	7.951
6	2 38 3.41	2.2505	14 58 48.2	13.817	6	4 28 20.85	2.3433	23 45 48.5	7.808
7	2 40 18.49	2.2522	15 12 34.2	13.716	7	4 30 41.49	2.3448	23 53 32.7	7.665
8	2 42 33.68	2.2540	15 26 14.1	13.613	8	4 33 2.22	2.3462	24 1 8.3	7.521
9	2 44 48.98	2.2558	15 39 47.7	13.508	9	4 35 23.03	2.3476	24 8 35.2	7.377
10	2 47 4.38	2.2577	15 53 15.0	13.402	10	4 37 43.93	2.3489	24 15 53.5	7.232
11	2 49 19.90	2.2596	16 6 35.9	13.295	11	4 40 4.90	2.3502	24 23 3.1	7.087
12	2 51 35.53	2.2614	16 19 50.4	13.187	12	4 42 25.95	2.3515	24 30 4.0	6.942
13	2 53 51.27	2.2633	16 32 58.4	13.078	13	4 44 47.08	2.3527	24 36 56.1	6.796
14	2 56 7.13	2.2652	16 45 59.7	12.968	14	4 47 8.27	2.3538	24 43 39.5	6.650
15	2 58 23.10	2.2672	16 58 54.4	12.856	15	4 49 29.53	2.3548	24 50 14.1	6.503
16	3 0 39.19	2.2692	17 11 42.4	12.743	16	4 51 50.85	2.3558	24 56 39.8	6.356
17	3 2 55.40	2.2712	17 24 23.6	12.629	17	4 54 12.23	2.3568	25 2 56.7	6.208
18	3 5 11.73	2.2732	17 36 57.9	12.514	18	4 56 33.67	2.3577	25 9 4.8	6.061
19	3 7 28.18	2.2752	17 49 25.3	12.399	19	4 58 55.16	2.3586	25 15 4.0	5.913
20	3 9 44.75	2.2772	18 1 45.8	12.283	20	5 1 16.70	2.3593	25 20 54.3	5.765
21	3 12 1.45	2.2793	18 13 59.3	12.165	21	5 3 38.28	2.3600	25 26 35.7	5.617
22	3 14 18.27	2.2814	18 26 5.6	12.046	22	5 5 59.90	2.3607	25 32 8.3	5.468
23	3 16 35.22	2.2835	18 38 4.8	11.927	23	5 8 21.56	2.3613	25 37 31.9	5.319
24	3 18 52.29	2.2856	N.18 49 56.8	11.806	24	5 10 43.25	2.3618	N.25 42 46.6	5.170

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 13.					MONDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 10 43.25	2.3618	N.25 42 46.6	5.170	0	7 3 13.92	2.2963	N.26 59 40.4	1.876
1	5 13 4.97	2.3622	25 47 52.3	5.021	1	7 5 31.60	2.2930	26 57 43.7	2.014
2	5 15 26.72	2.3625	25 52 49.1	4.872	2	7 7 49.08	2.2897	26 55 38.7	2.151
3	5 17 48.48	2.3628	25 57 36.9	4.722	3	7 10 6.36	2.2863	26 53 25.5	2.288
4	5 20 10.26	2.3630	26 2 15.7	4.572	4	7 12 23.44	2.2829	26 51 4.2	2.424
5	5 22 32.05	2.3632	26 6 45.5	4.422	5	7 14 40.31	2.2795	26 48 34.7	2.559
6	5 24 53.85	2.3633	26 11 6.3	4.272	6	7 16 56.98	2.2759	26 45 57.1	2.694
7	5 27 15.65	2.3633	26 15 18.1	4.122	7	7 19 13.43	2.2723	26 43 11.4	2.828
8	5 29 37.45	2.3633	26 19 21.0	3.972	8	7 21 29.66	2.2687	26 40 17.7	2.961
9	5 31 59.24	2.3632	26 23 14.9	3.822	9	7 23 45.67	2.2650	26 37 16.0	3.094
10	5 34 21.03	2.3630	26 26 59.7	3.672	10	7 26 1.46	2.2612	26 34 6.4	3.226
11	5 36 42.80	2.3627	26 30 35.5	3.522	11	7 28 17.02	2.2574	26 30 48.9	3.357
12	5 39 4.55	2.3623	26 34 2.3	3.372	12	7 30 32.35	2.2535	26 27 23.5	3.488
13	5 41 26.27	2.3618	26 37 20.1	3.223	13	7 32 47.44	2.2496	26 23 50.3	3.618
14	5 43 47.97	2.3613	26 40 29.0	3.073	14	7 35 2.30	2.2456	26 20 9.3	3.747
15	5 46 9.63	2.3607	26 43 28.9	2.923	15	7 37 16.92	2.2416	26 16 20.6	3.876
16	5 48 31.25	2.3600	26 46 19.7	2.773	16	7 39 31.29	2.2376	26 12 24.2	4.003
17	5 50 52.83	2.3593	26 49 1.5	2.623	17	7 41 45.42	2.2335	26 8 20.2	4.130
18	5 53 14.36	2.3585	26 51 34.4	2.473	18	7 43 59.31	2.2294	26 4 8.6	4.256
19	5 55 35.84	2.3575	26 53 58.3	2.324	19	7 46 12.95	2.2252	25 59 49.5	4.382
20	5 57 57.26	2.3564	26 56 13.3	2.175	20	7 48 26.33	2.2209	25 55 22.8	4.507
21	6 0 18.61	2.3553	26 58 19.3	2.026	21	7 50 39.46	2.2166	25 50 48.7	4.630
22	6 2 39.90	2.3541	27 0 16.4	1.877	22	7 52 52.32	2.2123	25 46 7.2	4.753
23	6 5 1.12	2.3529	N.27 2 4.5	1.728	23	7 55 4.92	2.2079	N.25 41 18.3	4.876
	SUNDAY 14.					TUESDAY 16.			
0	6 7 22.25	2.3516	N.27 3 43.7	1.579	0	7 57 17.27	2.2035	N.25 36 22.1	4.998
1	6 9 43.30	2.3502	27 5 14.0	1.431	1	7 59 29.35	2.1991	25 31 18.7	5.118
2	6 12 4.27	2.3487	27 6 35.4	1.283	2	8 1 41.16	2.1947	25 26 8.0	5.237
3	6 14 25.14	2.3471	27 7 47.9	1.135	3	8 3 52.70	2.1902	25 20 50.2	5.356
4	6 16 45.92	2.3454	27 8 51.6	0.988	4	8 6 3.98	2.1857	25 15 25.3	5.474
5	6 19 6.60	2.3437	27 9 46.5	0.841	5	8 8 14.98	2.1811	25 9 53.3	5.592
6	6 21 27.17	2.3419	27 10 32.5	0.694	6	8 10 25.71	2.1765	25 4 14.3	5.708
7	6 23 47.63	2.3400	27 11 9.7	0.548	7	8 12 36.16	2.1719	24 58 28.3	5.824
8	6 26 7.97	2.3380	27 11 38.2	0.402	8	8 14 46.34	2.1673	24 52 35.4	5.939
9	6 28 28.19	2.3360	27 11 57.9	0.256	9	8 16 56.24	2.1627	24 46 35.7	6.053
10	6 30 48.29	2.3339	27 12 8.9	+0.110	10	8 19 5.86	2.1580	24 40 29.1	6.166
11	6 33 8.26	2.3317	27 12 11.1	−0.035	11	8 21 15.20	2.1533	24 34 15.8	6.278
12	6 35 28.09	2.3294	27 12 4.7	0.179	12	8 23 24.25	2.1486	24 27 55.8	6.389
13	6 37 47.78	2.3270	27 11 49.6	0.323	13	8 25 33.02	2.1438	24 21 29.1	6.500
14	6 40 7.33	2.3246	27 11 25.9	0.467	14	8 27 41.51	2.1391	24 14 55.8	6.610
15	6 42 26.73	2.3221	27 10 53.6	0.610	15	8 29 49.72	2.1344	24 8 15.9	6.718
16	6 44 45.98	2.3195	27 10 12.7	0.753	16	8 31 57.64	2.1297	24 1 29.6	6.826
17	6 47 5.07	2.3168	27 9 23.2	0.895	17	8 34 5.28	2.1249	23 54 36.9	6.933
18	6 49 23.90	2.3140	27 8 25.3	1.037	18	8 36 12.63	2.1201	23 47 37.7	7.039
19	6 51 42.75	2.3112	27 7 18.9	1.178	19	8 38 19.69	2.1153	23 40 32.2	7.144
20	6 54 1.34	2.3083	27 6 4.0	1.319	20	8 40 26.47	2.1106	23 33 20.4	7.248
21	6 56 19.75	2.3054	27 4 40.6	1.459	21	8 42 32.96	2.1058	23 26 2.3	7.352
22	6 58 37.90	2.3024	27 3 8.9	1.599	22	8 44 39.16	2.1010	23 18 38.1	7.455
23	7 0 56.05	2.2994	27 1 28.8	1.738	23	8 46 45.08	2.0962	23 11 7.8	7.557
24	7 3 13.92	2.2963	N.26 59 40.4	1.876	24	8 48 50.70	2.0914	N.23 3 31.3	7.658

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 48 50.70	2.0914	N.23 3 31.3	7.658
1	8 50 56.03	2.0865	22 55 48.8	7.758
2	8 53 1.08	2.0817	22 48 0.4	7.856
3	8 55 5.84	2.0770	22 40 6.1	7.954
4	8 57 10.32	2.0722	22 32 5.9	8.051
5	8 59 14.51	2.0674	22 23 59.9	8.148
6	9 1 18.41	2.0627	22 15 48.1	8.243
7	9 3 22.03	2.0579	22 7 30.6	8.338
8	9 5 25.36	2.0531	21 59 7.5	8.432
9	9 7 28.40	2.0483	21 50 38.8	8.525
10	9 9 31.16	2.0436	21 42 4.5	8.617
11	9 11 33.64	2.0389	21 33 24.7	8.708
12	9 13 35.83	2.0342	21 24 39.6	8.798
13	9 15 37.74	2.0295	21 15 49.1	8.887
14	9 17 39.37	2.0248	21 6 53.2	8.975
15	9 19 40.72	2.0202	20 57 52.0	9.063
16	9 21 41.79	2.0155	20 48 45.7	9.149
17	9 23 42.58	2.0109	20 39 34.2	9.235
18	9 25 43.10	2.0063	20 30 17.5	9.320
19	9 27 43.34	2.0018	20 20 55.7	9.404
20	9 29 43.31	1.9972	20 11 29.0	9.486
21	9 31 43.00	1.9927	20 1 57.3	9.568
22	9 33 42.43	1.9882	19 52 20.8	9.649
23	9 35 41.59	1.9837	N.19 42 39.4	9.730

THURSDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 37 40.47	1.9792	N.19 32 53.2	9.810
1	9 39 39.09	1.9748	19 23 2.2	9.888
2	9 41 37.44	1.9704	19 13 6.6	9.965
3	9 43 35.53	1.9660	19 3 6.4	10.042
4	9 45 33.36	1.9617	18 53 1.5	10.118
5	9 47 30.93	1.9574	18 42 52.1	10.193
6	9 49 28.25	1.9531	18 32 38.3	10.268
7	9 51 25.31	1.9489	18 22 20.0	10.342
8	9 53 22.12	1.9447	18 11 57.3	10.414
9	9 55 18.67	1.9405	18 1 30.3	10.486
10	9 57 14.98	1.9364	17 50 59.0	10.556
11	9 59 11.04	1.9323	17 40 23.5	10.626
12	10 1 6.85	1.9282	17 29 43.9	10.695
13	10 3 2.42	1.9242	17 19 0.1	10.763
14	10 4 57.75	1.9202	17 8 12.3	10.830
15	10 6 52.84	1.9163	16 57 20.4	10.897
16	10 8 47.70	1.9124	16 46 24.6	10.963
17	10 10 42.33	1.9085	16 35 24.8	11.028
18	10 12 36.72	1.9047	16 24 21.2	11.092
19	10 14 30.89	1.9009	16 13 13.8	11.155
20	10 16 24.83	1.8971	16 2 2.6	11.217
21	10 18 18.55	1.8934	15 50 47.7	11.279
22	10 20 12.04	1.8898	15 39 29.1	11.340
23	10 22 5.32	1.8862	15 28 6.9	11.400
24	10 23 58.38	1.8826	N.15 16 41.1	11.459

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 23 58.38	1.8826	N.15 16 41.1	11.459
1	10 25 51.23	1.8791	15 5 11.8	11.517
2	10 27 43.87	1.8756	14 53 39.1	11.574
3	10 29 36.30	1.8722	14 42 2.9	11.631
4	10 31 28.53	1.8688	14 30 23.4	11.686
5	10 33 20.56	1.8655	14 18 40.6	11.741
6	10 35 12.39	1.8622	14 6 54.5	11.795
7	10 37 4.02	1.8589	13 55 5.2	11.848
8	10 38 55.46	1.8557	13 43 12.8	11.900
9	10 40 46.71	1.8526	13 31 17.2	11.952
10	10 42 37.77	1.8494	13 19 18.5	12.003
11	10 44 28.64	1.8463	13 7 16.8	12.053
12	10 46 19.33	1.8433	12 55 12.1	12.102
13	10 48 9.84	1.8404	12 43 4.5	12.151
14	10 50 0.18	1.8375	12 30 54.0	12.199
15	10 51 50.34	1.8347	12 18 40.7	12.246
16	10 53 40.34	1.8319	12 6 24.5	12.292
17	10 55 30.17	1.8292	11 54 5.6	12.337
18	10 57 19.84	1.8265	11 41 44.1	12.381
19	10 59 9.35	1.8238	11 29 19.9	12.425
20	11 0 58.70	1.8212	11 16 53.1	12.468
21	11 2 47.90	1.8187	11 4 23.8	12.510
22	11 4 36.95	1.8162	10 51 51.9	12.551
23	11 6 25.85	1.8138	N.10 39 17.5	12.592

SATURDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 8 14.61	1.8115	N.10 26 40.8	12.632
1	11 10 3.23	1.8092	10 14 1.7	12.671
2	11 11 51.71	1.8069	10 1 20.3	12.709
3	11 13 40.05	1.8047	9 48 36.6	12.747
4	11 15 28.27	1.8026	9 35 50.6	12.784
5	11 17 16.36	1.8005	9 23 2.4	12.820
6	11 19 4.33	1.7984	9 10 12.2	12.855
7	11 20 52.17	1.7964	8 57 19.9	12.889
8	11 22 39.90	1.7945	8 44 25.5	12.923
9	11 24 27.51	1.7927	8 31 29.1	12.956
10	11 26 15.02	1.7909	8 18 30.8	12.988
11	11 28 2.42	1.7891	8 5 30.5	13.020
12	11 29 49.71	1.7874	7 52 28.4	13.050
13	11 31 36.90	1.7857	7 39 24.5	13.080
14	11 33 24.00	1.7841	7 26 18.8	13.109
15	11 35 11.00	1.7826	7 13 11.4	13.138
16	11 36 57.91	1.7811	7 0 2.2	13.165
17	11 38 44.74	1.7797	6 46 51.4	13.192
18	11 40 31.48	1.7784	6 33 39.1	13.218
19	11 42 18.14	1.7771	6 20 25.2	13.243
20	11 44 4.73	1.7759	6 7 9.9	13.268
21	11 45 51.24	1.7747	5 53 53.1	13.292
22	11 47 37.69	1.7736	5 40 34.8	13.315
23	11 49 24.08	1.7726	5 27 15.2	13.338
24	11 51 10.40	1.7716	N. 5 13 54.3	13.359

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 51 10.40	1.7716	N. 5 13 54.3	13.359
1	11 52 56.66	1.7706	5 0 32.1	13.380
2	11 54 42.87	1.7697	4 47 8.7	13.400
3	11 56 29.03	1.7689	4 33 44.1	13.420
4	11 58 15.14	1.7682	4 20 18.3	13.438
5	12 0 1.21	1.7675	4 6 51.5	13.456
6	12 1 47.24	1.7669	3 53 23.6	13.473
7	12 3 33.23	1.7663	3 39 54.7	13.490
8	12 5 19.19	1.7658	3 26 24.8	13.505
9	12 7 5.12	1.7653	3 12 54.0	13.520
10	12 8 51.02	1.7649	2 59 22.4	13.534
11	12 10 36.90	1.7646	2 45 49.9	13.548
12	12 12 22.77	1.7643	2 32 16.7	13.561
13	12 14 8.62	1.7641	2 18 42.7	13.573
14	12 15 54.46	1.7639	2 5 8.0	13.584
15	12 17 40.29	1.7638	1 51 32.7	13.594
16	12 19 26.12	1.7638	1 37 56.7	13.604
17	12 21 11.95	1.7639	1 24 20.2	13.613
18	12 22 57.79	1.7640	1 10 43.2	13.621
19	12 24 43.63	1.7641	0 57 5.7	13.628
20	12 26 29.48	1.7644	0 43 27.8	13.635
21	12 28 15.35	1.7647	0 29 49.5	13.641
22	12 30 1.24	1.7650	0 16 10.9	13.646
23	12 31 47.15	1.7654	N. 0 2 32.0	13.650

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 33 33.09	1.7659	S. 0 11 7.1	13.654
1	12 35 19.06	1.7664	0 24 46.4	13.657
2	12 37 5.06	1.7670	0 38 25.9	13.659
3	12 38 51.10	1.7677	0 52 5.5	13.661
4	12 40 37.19	1.7685	1 5 45.2	13.662
5	12 42 23.32	1.7693	1 19 24.9	13.662
6	12 44 9.50	1.7702	1 33 4.6	13.661
7	12 45 55.74	1.7711	1 46 44.2	13.659
8	12 47 42.03	1.7721	2 0 23.7	13.656
9	12 49 28.38	1.7731	2 14 3.0	13.653
10	12 51 14.80	1.7742	2 27 42.1	13.649
11	12 53 1.28	1.7753	2 41 20.9	13.644
12	12 54 47.84	1.7766	2 54 59.4	13.638
13	12 56 34.47	1.7779	3 8 37.6	13.632
14	12 58 21.19	1.7793	3 22 15.3	13.625
15	13 0 7.99	1.7807	3 35 52.6	13.618
16	13 1 54.87	1.7822	3 49 29.5	13.609
17	13 3 41.85	1.7838	4 3 5.8	13.600
18	13 5 28.92	1.7854	4 16 41.5	13.589
19	13 7 16.09	1.7871	4 30 16.6	13.578
20	13 9 3.37	1.7888	4 43 50.9	13.566
21	13 10 50.75	1.7906	4 57 24.5	13.554
22	13 12 38.24	1.7925	5 10 57.4	13.541
23	13 14 25.85	1.7944	5 24 29.5	13.527
24	13 16 13.57	1.7964	S. 5 38 0.6	13.511

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 16 13.57	1.7964	S. 5 38 0.6	13.511
1	13 18 1.41	1.7985	5 51 30.8	13.495
2	13 19 49.39	1.8006	6 5 0.0	13.479
3	13 21 37.50	1.8028	6 18 28.2	13.462
4	13 23 25.73	1.8051	6 31 55.4	13.443
5	13 25 14.10	1.8074	6 45 21.5	13.424
6	13 27 2.62	1.8098	6 58 46.3	13.404
7	13 28 51.28	1.8122	7 12 9.9	13.383
8	13 30 40.09	1.8147	7 25 32.3	13.361
9	13 32 29.05	1.8173	7 38 53.3	13.339
10	13 34 18.17	1.8200	7 52 13.0	13.316
11	13 36 7.45	1.8227	8 5 31.2	13.292
12	13 37 56.90	1.8255	8 18 48.0	13.267
13	13 39 46.52	1.8283	8 32 3.3	13.242
14	13 41 36.30	1.8312	8 45 17.0	13.215
15	13 43 26.26	1.8342	8 58 29.0	13.187
16	13 45 16.41	1.8373	9 11 39.4	13.158
17	13 47 6.74	1.8404	9 24 48.1	13.129
18	13 48 57.26	1.8436	9 37 54.9	13.099
19	13 50 47.97	1.8468	9 50 59.9	13.068
20	13 52 38.87	1.8501	10 4 3.0	13.036
21	13 54 29.97	1.8534	10 17 4.2	13.003
22	13 56 21.28	1.8568	10 30 3.4	12.969
23	13 58 12.79	1.8603	S. 10 43 0.5	12.935

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 0 4.51	1.8638	S. 10 55 55.6	12.899
1	14 1 56.44	1.8674	11 8 48.5	12.863
2	14 3 48.60	1.8711	11 21 39.1	12.826
3	14 5 40.98	1.8748	11 34 27.5	12.788
4	14 7 33.58	1.8786	11 47 13.6	12.748
5	14 9 26.41	1.8825	11 59 57.3	12.708
6	14 11 19.48	1.8864	12 12 38.6	12.667
7	14 13 12.78	1.8904	12 25 17.4	12.625
8	14 15 6.33	1.8945	12 37 53.6	12.582
9	14 17 0.12	1.8986	12 50 27.2	12.538
10	14 18 54.16	1.9027	13 2 58.2	12.493
11	14 20 48.45	1.9069	13 15 26.5	12.448
12	14 22 42.99	1.9112	13 27 52.0	12.401
13	14 24 37.79	1.9156	13 40 14.6	12.353
14	14 26 32.86	1.9200	13 52 34.4	12.304
15	14 28 28.19	1.9244	14 4 51.2	12.255
16	14 30 23.79	1.9290	14 17 5.0	12.204
17	14 32 19.67	1.9336	14 29 15.7	12.153
18	14 34 15.82	1.9382	14 41 23.3	12.100
19	14 36 12.25	1.9429	14 53 27.7	12.046
20	14 38 8.97	1.9476	15 5 28.8	11.991
21	14 40 5.97	1.9524	15 17 26.6	11.936
22	14 42 3.26	1.9573	15 29 21.1	11.879
23	14 44 0.85	1.9622	15 41 12.1	11.821
24	14 45 58.73	1.9672	S. 15 52 59.6	11.762

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 25.					SATURDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 45 58.73	1.9672	S.15 52 59.6	11.762	0	16 26 59.40	2.2534	S.23 48 35.2	7.602
1	14 47 56.91	1.9723	16 4 43.5	11.702	1	16 29 14.80	2.2598	23 56 7.8	7.485
2	14 49 55.40	1.9774	16 16 23.8	11.641	2	16 31 30.58	2.2663	24 3 33.4	7.367
3	14 51 54.19	1.9825	16 28 0.4	11.579	3	16 33 46.75	2.2727	24 10 51.9	7.248
4	14 53 53.30	1.9877	16 39 33.3	11.516	4	16 36 3.30	2.2791	24 18 3.2	7.128
5	14 55 52.72	1.9929	16 51 2.4	11.452	5	16 38 20.24	2.2854	24 25 7.2	7.007
6	14 57 52.45	1.9982	17 2 27.5	11.386	6	16 40 37.55	2.2918	24 32 4.0	6.884
7	14 59 52.50	2.0036	17 13 48.7	11.320	7	16 42 55.24	2.2981	24 38 53.4	6.760
8	15 1 52.88	2.0090	17 25 5.9	11.253	8	16 45 13.32	2.3044	24 45 35.2	6.635
9	15 3 53.58	2.0144	17 36 19.0	11.184	9	16 47 31.77	2.3107	24 52 9.5	6.508
10	15 5 54.61	2.0199	17 47 28.0	11.114	10	16 49 50.60	2.3169	24 58 36.2	6.380
11	15 7 55.97	2.0254	17 58 32.8	11.044	11	16 52 9.80	2.3231	25 4 55.2	6.252
12	15 9 57.66	2.0310	18 9 33.3	10.972	12	16 54 29.37	2.3293	25 11 6.5	6.122
13	15 11 59.69	2.0367	18 20 29.4	10.899	13	16 56 49.32	2.3355	25 17 9.9	5.991
14	15 14 2.06	2.0424	18 31 21.2	10.825	14	16 59 9.63	2.3416	25 23 5.4	5.859
15	15 16 4.77	2.0481	18 42 8.5	10.751	15	17 1 30.31	2.3477	25 28 52.9	5.725
16	15 18 7.83	2.0538	18 52 51.3	10.675	16	17 3 51.35	2.3537	25 34 32.4	5.590
17	15 20 11.23	2.0596	19 3 29.5	10.597	17	17 6 12.75	2.3597	25 40 3.7	5.453
18	15 22 14.98	2.0654	19 14 2.9	10.518	18	17 8 34.51	2.3657	25 45 26.8	5.315
19	15 24 19.08	2.0713	19 24 31.6	10.438	19	17 10 56.63	2.3716	25 50 41.6	5.177
20	15 26 23.54	2.0772	19 34 55.5	10.357	20	17 13 19.10	2.3774	25 55 48.1	5.038
21	15 28 28.35	2.0832	19 45 14.5	10.275	21	17 15 41.92	2.3832	26 0 46.2	4.897
22	15 30 33.53	2.0892	19 55 28.5	10.192	22	17 18 5.08	2.3889	26 5 35.8	4.755
23	15 32 39.07	2.0953	S.20 5 37.4	10.107	23	17 20 28.58	2.3946	S.26 10 16.9	4.613
	FRIDAY 26.					SUNDAY 28.			
0	15 34 44.97	2.1014	S.20 15 41.3	10.021	0	17 22 52.43	2.4002	S.26 14 49.3	4.469
1	15 36 51.24	2.1075	20 25 40.0	9.935	1	17 25 16.61	2.4058	26 19 13.0	4.323
2	15 38 57.87	2.1136	20 35 33.5	9.847	2	17 27 41.13	2.4113	26 23 28.0	4.176
3	15 41 4.87	2.1198	20 45 21.7	9.758	3	17 30 5.98	2.4167	26 27 34.2	4.028
4	15 43 12.24	2.1260	20 55 4.4	9.667	4	17 32 31.14	2.4220	26 31 31.4	3.879
5	15 45 19.98	2.1322	21 4 41.7	9.575	5	17 34 56.62	2.4273	26 35 19.7	3.730
6	15 47 28.10	2.1384	21 14 13.4	9.482	6	17 37 22.42	2.4325	26 38 59.0	3.580
7	15 49 36.59	2.1447	21 23 39.5	9.388	7	17 39 48.53	2.4377	26 42 29.2	3.428
8	15 51 45.46	2.1510	21 33 0.0	9.293	8	17 42 14.94	2.4428	26 45 50.3	3.275
9	15 53 54.71	2.1573	21 42 14.7	9.197	9	17 44 41.66	2.4477	26 49 2.2	3.121
10	15 56 4.33	2.1636	21 51 23.6	9.100	10	17 47 8.67	2.4526	26 52 4.8	2.966
11	15 58 14.34	2.1700	22 0 26.6	9.001	11	17 49 35.97	2.4574	26 54 58.1	2.810
12	16 0 24.73	2.1764	22 9 23.7	8.901	12	17 52 3.56	2.4621	26 57 42.0	2.653
13	16 2 35.50	2.1828	22 18 14.7	8.799	13	17 54 31.43	2.4668	27 0 16.4	2.495
14	16 4 46.66	2.1891	22 26 59.6	8.696	14	17 56 59.57	2.4714	27 2 41.4	2.336
15	16 6 58.20	2.1955	22 35 38.3	8.592	15	17 59 27.98	2.4758	27 4 56.8	2.177
16	16 9 10.12	2.2019	22 44 10.7	8.487	16	18 1 56.66	2.4801	27 7 2.6	2.017
17	16 11 22.43	2.2083	22 52 36.7	8.381	17	18 4 25.59	2.4843	27 8 58.8	1.855
18	16 13 35.12	2.2147	23 0 56.4	8.273	18	18 6 54.77	2.4884	27 10 45.2	1.692
19	16 15 48.20	2.2212	23 9 9.6	8.164	19	18 9 24.20	2.4925	27 12 21.9	1.529
20	16 18 1.67	2.2276	23 17 16.1	8.054	20	18 11 53.87	2.4965	27 13 48.7	1.365
21	16 20 15.52	2.2341	23 25 16.0	7.943	21	18 14 23.77	2.5003	27 15 5.7	1.201
22	16 22 29.76	2.2406	23 33 9.2	7.831	22	18 16 53.90	2.5040	27 16 12.8	1.036
23	16 24 44.39	2.2470	23 40 55.6	7.717	23	18 19 24.25	2.5076	27 17 9.9	0.869
24	16 26 59.40	2.2534	S.23 48 35.2	7.602	24	18 21 54.81	2.5111	S.27 17 57.1	0.702

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 21 54.81	2.5111	S.27 17 57.1	0.702
1	18 24 25.58	2.5145	27 18 34.2	0.534
2	18 26 56.55	2.5178	27 19 1.2	0.366
3	18 29 27.72	2.5210	27 19 18.1	0.197
4	18 31 59.07	2.5240	27 19 24.8	−0.027
5	18 34 30.60	2.5269	27 19 21.3	+0.143
6	18 37 2.30	2.5297	27 19 7.6	0.314
7	18 39 34.16	2.5324	27 18 43.6	0.486
8	18 42 6.19	2.5350	27 18 9.3	0.658
9	18 44 38.37	2.5375	27 17 24.6	0.831
10	18 47 10.69	2.5399	27 16 29.6	1.004
11	18 49 43.15	2.5421	27 15 24.2	1.177
12	18 52 15.74	2.5442	27 14 8.4	1.351
13	18 54 48.45	2.5462	27 12 42.1	1.525
14	18 57 21.28	2.5480	27 11 5.4	1.700
15	18 59 54.21	2.5497	27 9 18.2	1.875
16	19 2 27.24	2.5513	27 7 20.4	2.050
17	19 5 0·36	2.5528	27 5 12.1	2.225
18	19 7 33.57	2.5541	27 2 53.4	2.401
19	19 10 6.86	2.5553	27 0 24.1	2.577
20	19 12 40.21	2.5564	26 57 44.1	2.753
21	19 15 13.62	2.5573	26 54 53.6	2.929
22	19 17 47.09	2.5582	26 51 52.6	3.105
23	19 20 20.61	2.5589	26 48 41.0	3.282
24	19 22 54.16	2.5595	S.26 45 18.7	3.459

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 22 54.16	2.5595	S.26 45 18.7	3.459
1	19 25 27.74	2.5599	26 41 45.8	3.636
2	19 28 1.35	2.5602	26 38 2.4	3.813
3	19 30 34.97	2.5605	26 34 8.4	3.989
4	19 33 8.61	2.5606	26 30 3.7	4.166
5	19 35 42.25	2.5606	26 25 48.5	4.342
6	19 38 15.88	2.5605	26 21 22.7	4.518
7	19 40 49.50	2.5602	26 16 46.3	4.694
8	19 43 23.10	2.5598	26 11 59.4	4.871
9	19 45 56.67	2.5593	26 7 1.9	5.047
10	19 48 30.21	2.5587	26 1 53.8	5.223
11	19 51 3.71	2.5579	25 56 35.2	5.398
12	19 53 37.16	2.5570	25 51 6.1	5.573
13	19 56 10.55	2.5561	25 45 26.5	5.747
14	19 58 43.89	2.5550	25 39 36.5	5.921
15	20 1 17.16	2.5538	25 33 36.0	6.095
16	20 3 50.35	2.5525	25 27 25.1	6.269
17	20 6 23.46	2.5512	25 21 3.8	6.442
18	20 8 56.49	2.5497	25 14 32.1	6.614
19	20 11 29.42	2.5480	25 7 50.1	6.786
20	20 14 2.25	2.5463	25 0 57.8	6.957
21	20 16 34.98	2.5446	24 53 55.2	7.128
22	20 19 7.60	2.5427	24 46 42.4	7.298
23	20 21 40.10	2.5407	24 39 19.4	7.469
24	20 24 12.48	2.5386	S.24 31 46.3	7.637

PHASES OF THE MOON.

	d	h	m
○ Full Moon, ...	6	9	9.2
☾ Last Quarter, ...	13	3	40.8
● New Moon, ...	21	5	51.1
☽ First Quarter, ...	29	2	56.1

	d	h
☾ Perigee, ...	6	8.3
☾ Apogee, ...	19	19.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	106° 21′ 47″	2829	107° 55′ 37″	2809	109° 29′ 53″	2790	111° 4′ 34″	2771
	Spica	W.	63 19 28	2504	65 0 36	2485	66 42 10	2467	68 24 10	2448
	Mars	W.	23 59 39	2695	25 36 25	2676	27 13 37	2657	28 51 15	2638
	Saturn	E.	31 24 17	2524	29 43 37	2512	28 2 40	2499	26 21 26	2489
	α Aquilæ	E.	46 18 59	4549	45 15 50	4660	44 14 17	4787	43 14 30	4928
	Fomalhaut	E.	67 6 0	2701	65 29 22	2689	63 52 27	2677	62 15 16	2666
	α Pegasi	E.	87 31 20	2869	85 58 22	2852	84 25 2	2836	82 51 21	2821
2	Sun	W.	119 4 22	2674	120 41 37	2655	122 19 17	2636	123 57 23	2618
	Spica	W.	77 0 47	2355	78 45 26	2337	80 30 32	2318	82 16 5	2300
	Mars	W.	37 5 58	2541	38 46 14	2522	40 26 56	2503	42 8 5	2485
	Antares	W.	31 6 41	2361	32 51 12	2341	34 36 12	2322	36 21 40	2302
	Fomalhaut	E.	54 5 59	2624	52 27 36	2619	50 49 7	2616	49 10 34	2615
	α Pegasi	E.	74 58 15	2755	73 22 48	2744	71 47 6	2734	70 11 11	2726
	α Arietis	E.	116 58 21	2441	115 15 45	2421	113 32 40	2401	111 49 6	2380
3	Spica	W.	91 10 19	2214	92 58 25	2197	94 46 57	2181	96 35 53	2166
	Mars	W.	50 40 17	2395	52 23 59	2378	54 8 6	2361	55 52 37	2344
	Antares	W.	45 15 52	2212	47 4 2	2195	48 52 37	2178	50 41 37	2162
	Fomalhaut	E.	40 58 42	2654	39 21 0	2674	37 43 45	2699	36 7 4	2732
	α Pegasi	E.	62 9 32	2707	60 33 2	2708	58 56 33	2713	57 20 10	2720
	α Arietis	E.	103 4 10	2285	101 17 49	2268	99 31 3	2251	97 43 51	2235
4	Spica	W.	105 46 12	2095	107 37 19	2082	109 28 46	2070	111 20 31	2059
	Mars	W.	64 40 55	2270	66 27 39	2257	68 14 42	2244	70 2 4	2231
	Antares	W.	59 52 32	2088	61 43 49	2075	63 35 26	2063	65 27 22	2052
	α Pegasi	E.	49 22 3	2808	47 47 45	2838	46 14 7	2876	44 41 17	2921
	α Arietis	E.	88 42 3	2161	86 52 37	2149	85 2 53	2137	83 12 51	2126
5	Mars	W.	79 3 8	2181	80 52 4	2173	82 41 12	2167	84 30 30	2160
	Antares	W.	74 51 19	2001	76 44 51	1994	78 38 35	1987	80 32 30	1981
	α Aquilæ	W.	40 54 36	4758	41 54 47	4541	42 58 3	4350	44 4 10	4180
	Saturn	W.	26 55 37	2043	28 48 4	2029	30 40 53	2017	32 34 1	2006
	α Arietis	E.	73 58 50	2083	72 7 25	2077	70 15 51	2073	68 24 10	2068
	Aldebaran	E.	104 14 31	2034	102 21 50	2025	100 28 55	2017	98 35 48	2011
6	Mars	W.	93 39 2	2140	95 29 0	2139	97 19 0	2138	99 9 1	2138
	Antares	W.	90 4 7	1962	91 58 42	1960	93 53 20	1959	95 47 59	1960
	α Aquilæ	W.	50 10 29	3567	51 29 39	3481	52 50 24	3404	54 12 36	3335
	Saturn	W.	42 3 9	1973	43 57 26	1969	45 51 49	1967	47 46 15	1967
	α Arietis	E.	59 4 48	2067	57 12 58	2070	55 21 12	2074	53 29 33	2081
	Aldebaran	E.	89 8 7	1992	87 14 20	1990	85 20 30	1990	83 26 40	1990
7	Antares	W.	105 20 42	1973	107 14 59	1977	109 9 9	1984	111 3 9	1991
	α Aquilæ	W.	61 20 58	3089	62 49 21	3056	64 18 24	3027	65 48 3	3003
	Saturn	W.	57 18 20	1975	59 12 34	1979	61 6 42	1984	63 0 41	1990
	Fomalhaut	W.	27 6 33	2927	28 38 18	2822	30 12 16	2737	31 48 7	2666
	α Arietis	E.	44 14 39	2139	42 24 39	2156	40 35 5	2176	38 46 2	2201
	Aldebaran	E.	73 58 6	2006	72 4 41	2012	70 11 25	2018	68 18 19	2026
8	α Aquilæ	W.	73 22 25	2332	74 54 3	2928	76 25 46	2925	77 57 33	2925
	Saturn	W.	72 27 52	2032	74 20 37	2042	76 13 5	2053	78 5 16	2066
	Fomalhaut	W.	40 6 23	2463	41 48 28	2443	43 31 1	2428	45 13 56	2416
	Aldebaran	E.	58 56 17	2077	57 4 43	2090	55 13 29	2104	53 22 36	2118
	Pollux	E.	102 47 17	2032	100 54 32	2042	99 2 3	2053	97 9 52	2065

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	112° 39′ 40″	2751	114° 15′ 12″	2732	115° 51′ 9″	2713	117° 27′ 32″	2692
	Spica	W.	70 6 36	2429	71 49 29	2411	73 32 48	2392	75 16 34	2373
	Mars	W.	30 29 19	2618	32 7 49	2599	33 46 46	2580	35 26 9	2561
	Saturn	E.	24 39 58	2480	22 58 17	2475	21 16 28	2471	19 34 34	2472
	α Aquilæ	E.	42 16 38	5090	41 20 53	5276	40 27 28	5487	39 36 35	5725
	Fomalhaut	E.	60 37 50	2655	59 0 10	2646	57 22 18	2638	55 44 14	2629
	α Pegasi	E.	81 17 21	2806	79 43 1	2792	78 8 23	2779	76 33 27	2766
2	Sun	W.	125 35 54	2599	127 14 50	2582	128 54 10	2564	130 33 54	2547
	Spica	W.	84 2 4	2283	85 48 29	2264	87 35 21	2247	89 22 38	2231
	Mars	W.	43 49 40	2466	45 31 41	2448	47 14 8	2430	48 57 0	2412
	Antares	W.	38 7 36	2283	39 54 0	2265	41 40 51	2247	43 28 8	2229
	Fomalhaut	E.	47 32 0	2617	45 53 28	2621	44 15 1	2628	42 36 44	2639
	α Pegasi	E.	68 35 6	2719	66 58 52	2713	65 22 30	2709	63 46 2	2707
	α Arietis	E.	110 5 3	2361	108 20 32	2341	106 35 32	2322	104 50 4	2304
3	Spica	W.	98 25 12	2151	100 14 54	2136	102 4 59	2122	103 55 25	2108
	Mars	W.	57 37 32	2328	59 22 50	2313	61 8 30	2298	62 54 32	2284
	Antares	W.	52 31 2	2146	54 20 51	2132	56 11 2	2116	58 1 36	2102
	Fomalhaut	E.	34 31 6	2773	32 56 3	2825	31 22 7	2889	29 49 34	2969
	α Pegasi	E.	55 43 57	2730	54 7 57	2744	52 32 15	2760	50 56 55	2782
	α Arietis	E.	95 56 15	2218	94 8 15	2204	92 19 53	2189	90 31 9	2174
4	Spica	W.	113 12 34	2048	115 4 53	2038	116 57 28	2029	118 50 17	2020
	Mars	W.	71 49 45	2220	73 37 43	2210	75 25 56	2199	77 14 25	2190
	Antares	W.	67 19 36	2040	69 12 8	2030	71 4 56	2019	72 58 0	2010
	α Pegasi	E.	43 9 25	2973	41 38 39	3035	40 9 10	3109	38 41 11	3194
	α Arietis	E.	81 22 32	2116	79 31 57	2106	77 41 7	2098	75 50 4	2090
5	Mars	W.	86 19 58	2155	88 9 34	2149	89 59 18	2145	91 49 8	2143
	Antares	W.	82°26 34	1975	84 20 47	1970	86 15 8	1967	88 9 35	1963
	α Aquilæ	W.	45 12 55	4028	46 24 7	3894	47 37 33	3773	48 53 3	3663
	Saturn	W.	34 27 26	1997	36 21 5	1989	38 14 57	1982	40 8 59	1977
	α Arietis	E.	66 32 22	2066	64 40 30	2064	62 48 36	2064	60 56 41	2065
	Aldebaran	E.	96 42 31	2005	94 49 5	2000	92 55 31	1996	91 1 51	1994
6	Mars	W.	100 59 2	2139	102 49 1	2141	104 38 57	2145	106 28 48	2148
	Antares	W.	97 42 37	1960	99 37 14	1962	101 31 48	1965	103 26 18	1968
	α Aquilæ	W.	55 36 7	3274	57 0 49	3219	58 26 36	3170	59 53 21	3127
	Saturn	W.	49 40 42	1966	51 35 10	1967	53 29 36	1968	55 24 0	1971
	α Arietis	E.	51 38 5	2089	49 46 49	2098	47 55 47	2109	46 5 2	2124
	Aldebaran	E.	81 32 50	1991	79 39 2	1994	77 45 18	1997	75 51 39	2001
7	Antares	W.	112 56 58	1998	114 50 36	2006	116 44 1	2015	118 37 12	2024
	α Aquilæ	W.	67 18 12	2982	68 48 47	2965	70 19 43	2951	71 50 57	2940
	Saturn	W.	64 54 31	1997	66 48 10	2004	68 41 38	2013	70 34 52	2022
	Fomalhaut	W.	33 25 33	2607	35 4 18	2559	36 44 9	2520	38 24 54	2489
	α Arietis	E.	36 57 36	2228	35 9 50	2259	33 22 50	2295	31 36 43	2337
	Aldebaran	E.	66 25 25	2035	64 32 45	2044	62 40 19	2054	60 48 9	2066
8	α Aquilæ	W.	79 29 20	2927	81 1 4	2931	82 32 43	2938	84 4 14	2947
	Saturn	W.	79 57 8	2078	81 48 41	2091	83 39 54	2105	85 30 46	2119
	Fomalhaut	W.	46 57 8	2408	48 40 32	2403	50 24 3	2400	52 7 38	2399
	Aldebaran	E.	51 32 5	2134	49 41 58	2151	47 52 16	2169	46 3 1	2187
	Pollux	E.	95 17 59	2077	93 26 25	2091	91 35 12	2105	89 44 20	2119

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Saturn	W.	87° 21′ 16″	2134	89° 11′ 24″	2149	91° 1′ 8″	2165	92° 50′ 29″	2180
	α Aquilæ	W.	85 35 33	2958	87 6 39	2970	88 37 29	2985	90 8 0	3001
	Fomalhaut	W.	53 51 14	2401	55 34 48	2405	57 18 16	2410	59 1 37	2417
	α Pegasi	W.	38 5 0	3264	39 29 54	3194	40 56 10	3135	42 23 37	3085
	Aldebaran	E.	44 14 14	2207	42 25 57	2227	40 38 10	2249	38 50 55	2272
	Pollux	E.	87 53 50	2134	86 3 42	2149	84 13 57	2165	82 24 36	2180
	Venus	E.	104 8 12	2512	102 27 15	2528	100 46 41	2545	99 6 30	2562
10	Saturn	W.	101 51 2	2266	103 37 51	2284	105 24 14	2302	107 10 10	2321
	α Aquilæ	W.	97 34 56	3108	99 2 56	3133	100 30 25	3162	101 57 20	3192
	Fomalhaut	W.	67 35 23	2467	69 17 22	2480	70 59 3	2494	72 40 25	2509
	α Pegasi	W.	49 53 12	2937	51 24 44	2923	52 56 34	2912	54 28 38	2902
	Pollux	E.	73 24 2	2266	71 37 12	2283	69 50 48	2301	68 4 50	2320
	Venus	E.	90 51 42	2654	89 14 0	2674	87 36 45	2693	85 59 56	2713
	Sun	E.	129 31 44	2591	127 52 37	2610	126 13 56	2629	124 35 40	2647
11	α Aquilæ	W.	109 2 27	3366	110 25 22	3406	111 47 32	3448	113 8 54	3494
	Fomalhaut	W.	81 1 55	2588	82 41 6	2606	84 19 53	2624	85 58 16	2641
	α Pegasi	W.	62 10 36	2898	63 42 58	2901	65 15 15	2907	66 47 25	2915
	Pollux	E.	59 21 47	2413	57 38 31	2431	55 55 41	2450	54 13 18	2469
	Venus	E.	78 2 32	2815	76 28 24	2835	74 54 42	2856	73 21 27	2876
	Sun	E.	116 30 42	2744	114 55 0	2763	113 19 43	2782	111 44 52	2803
12	Fomalhaut	W.	94 4 6	2733	95 40 2	2752	97 15 33	2771	98 50 39	2790
	α Pegasi	W.	74 25 33	2963	75 56 32	2975	77 27 16	2988	78 57 44	3001
	α Arietis	W.	30 51 0	2857	32 24 14	2849	33 57 38	2845	35 31 8	2842
	Pollux	E.	45 47 55	2562	44 8 8	2580	42 28 45	2598	40 49 47	2615
	Venus	E.	65 41 44	2979	64 11 5	2999	62 40 51	3019	61 11 2	3039
	Sun	E.	103 57 2	2899	102 24 42	2919	100 52 47	2938	99 21 16	2956
13	Fomalhaut	W.	106 39 53	2887	108 12 29	2906	109 44 40	2926	111 16 26	2946
	α Pegasi	W.	86 25 50	3072	87 54 34	3087	89 22 59	3103	90 51 5	3118
	α Arietis	W.	43 18 30	2859	44 51 41	2866	46 24 44	2873	47 57 37	2881
	Pollux	E.	32 40 57	2703	31 4 21	2719	29 28 7	2737	27 52 16	2754
	Venus	E.	53 47 59	3135	52 20 32	3153	50 53 27	3173	49 26 45	3190
	Sun	E.	91 49 26	3046	90 20 10	3064	88 51 16	3080	87 22 42	3097
14	α Pegasi	W.	98 6 48	3200	99 32 57	3217	100 58 46	3234	102 24 15	3252
	α Arietis	W.	55 39 19	2927	57 11 4	2935	58 42 38	2945	60 14 0	2954
	Aldebaran	W.	25 17 5	3001	26 47 16	2997	28 17 33	2993	29 47 54	2993
	Venus	E.	42 18 31	3278	40 53 54	3294	39 29 36	3312	38 5 38	3329
	Sun	E.	80 4 50	3175	78 38 11	3190	77 11 50	3204	75 45 45	3218
15	α Pegasi	W.	109 26 26	3343	110 49 48	3363	112 12 47	3382	113 35 24	3402
	α Arietis	W.	67 47 54	3000	69 18 7	3009	70 48 9	3017	72 18 1	3025
	Aldebaran	W.	37 19 30	3004	38 49 38	3007	40 19 42	3012	41 49 40	3018
	Venus	E.	31 10 36	3412	29 48 33	3428	28 26 48	3446	27 5 23	3463
	Sun	E.	68 39 18	3282	67 14 45	3293	65 50 25	3304	64 26 18	3315
16	α Arietis	W.	79 44 53	3063	81 13 48	3069	82 42 35	3076	84 11 14	3083
	Aldebaran	W.	49 17 52	3043	50 47 11	3047	52 16 25	3052	53 45 33	3058
	Sun	E.	57 28 43	3364	56 5 45	3372	54 42 56	3380	53 20 17	3388
17	α Arietis	W.	91 32 34	3112	93 0 29	3116	94 28 19	3121	95 56 3	3126
	Aldebaran	W.	61 9 46	3078	62 38 22	3082	64 6 53	3086	65 35 20	3089

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Saturn	W.	94° 39′ 26″	2197	96° 27′ 58″	2214	98° 16′ 5″	2231	100° 3′ 46″	2248
	α Aquilæ	W.	91 38 12	3018	93 8 2	3039	94 37 27	3060	96 6 26	3083
	Fomalhaut	W.	60 44 48	2424	62 27 48	2433	64 10 35	2444	65 53 7	2455
	α Pegasi	W.	43 52 5	3043	45 21 24	3009	46 51 26	2980	48 22 4	2956
	Aldebaran	E.	37 4 15	2297	35 18 11	2324	33 32 46	2352	31 48 2	2382
	Pollux	E.	80 35 39	2197	78 47 7	2214	76 59 0	2231	75 11 18	2248
	Venus	E.	97 26 43	2580	95 47 20	2598	94 8 22	2616	92 29 49	2635
10	Saturn	W.	108 55 39	2340	110 40 40	2359	112 25 14	2378	114 9 21	2396
	α Aquilæ	W.	103 23 39	3223	104 49 21	3255	106 14 25	3290	107 38 48	3328
	Fomalhaut	W.	74 21 26	2524	76 2 6	2539	77 42 25	2556	79 22 21	2572
	α Pegasi	W.	56 0 54	2897	57 33 17	2894	59 5 43	2894	60 38 10	2894
	Pollux	E.	66 19 20	2339	64 34 17	2357	62 49 40	2375	61 5 30	2394
	Venus	E.	84 23 34	2733	82 47 38	2753	81 12 9	2774	79 37 7	2795
	Sun	E.	122 57 49	2666	121 20 24	2685	119 43 24	2704	118 6 50	2724
11	α Aquilæ	W.	114 29 25	3541	115 49 4	3589	117 7 50	3641	118 25 40	3697
	Fomalhaut	W.	87 36 15	2659	89 13 50	2678	90 51 0	2696	92 27 45	2714
	α Pegasi	W.	68 19 25	2923	69 51 15	2931	71 22 54	2942	72 54 20	2952
	Pollux	E.	52 31 21	2487	50 49 50	2507	49 8 46	2525	47 28 8	2543
	Venus	E.	71 48 38	2897	70 16 15	2918	68 44 19	2939	67 12 49	2958
	Sun	E.	110 10 28	2822	108 36 29	2842	107 2 55	2861	105 29 46	2880
12	Fomalhaut	W.	100 25 20	2810	101 59 35	2828	103 33 26	2848	105 6 52	2867
	α Pegasi	W.	80 27 56	3014	81 57 51	3029	83 27 28	3043	84 56 48	3057
	α Arietis	W.	37 4 42	2842	38 38 16	2845	40 11 46	2848	41 45 11	2853
	Pollux	E.	39 11 13	2634	37 33 4	2651	35 55 18	2669	34 17 56	2686
	Venus	E.	59 41 38	3059	58 12 38	3078	56 44 2	3097	55 15 49	3116
	Sun	E.	97 50 8	2975	96 19 24	2993	94 49 2	3011	93 19 3	3029
13	Fomalhaut	W.	112 47 47	2965	114 18 43	2986	115 49 13	3006	117 19 18	3026
	α Pegasi	W.	92 18 53	3134	93 46 21	3150	95 13 30	3167	96 40 19	3183
	α Arietis	W.	49 30 20	2890	51 2 52	2898	52 35 13	2908	54 7 22	2917
	Pollux	E.	26 16 48	2771	24 41 42	2787	23 6 57	2803	21 32 33	2819
	Venus	E.	48 0 24	3209	46 34 25	3225	45 8 46	3243	43 43 28	3261
	Sun	E.	85 54 29	3114	84 26 36	3129	82 59 2	3145	81 31 47	3160
14	α Pegasi	W.	103 49 23	3269	105 14 11	3288	106 38 37	3306	108 2 42	3324
	α Arietis	W.	61 45 10	2964	63 16 8	2973	64 46 55	2982	66 17 30	2991
	Aldebaran	W.	31 18 16	2993	32 48 38	2993	34 18 59	2996	35 49 17	3000
	Venus	E.	36 42 0	3345	35 18 41	3361	33 55 40	3378	32 32 58	3395
	Sun	E.	74 19 57	3231	72 54 25	3244	71 29 8	3257	70 4 6	3269
15	α Pegasi	W.	114 57 38	3423	116 19 28	3445	117 40 54	3467	119 1 55	3491
	α Arietis	W.	73 47 43	3033	75 17 15	3041	76 46 37	3049	78 15 49	3056
	Aldebaran	W.	43 19 31	3022	44 49 16	3027	46 18 55	3033	47 48 27	3039
	Venus	E.	25 44 20	3484	24 23 38	3504	23 3 18	3525	21 43 21	3548
	Sun	E.	63 2 24	3325	61 38 42	3335	60 15 11	3345	58 51 52	3354
16	α Arietis	W.	85 39 44	3089	87 8 7	3095	88 36 23	3101	90 4 32	3106
	Aldebaran	W.	55 14 34	3062	56 43 30	3067	58 12 20	3071	59 41 5	3074
	Sun	E.	51 57 47	3396	50 35 26	3403	49 18 13	3410	47 51 8	3416
17	α Arietis	W.	97 23 41	3130	98 51 14	3134	100 18 42	3138	101 46 5	3143
	Aldebaran	W.	67 3 43	3092	68 32 2	3095	70 0 18	3097	71 28 31	3101

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Sun	E.	46° 29′ 10″	3423	45° 7′ 20″	3430	43° 45′ 37″	3435	42° 24′ 0″	3441
18	α Arietis	W.	103 13 23	3146	104 40 37	3150	106 7 46	3153	107 34 51	3157
	Aldebaran	W.	72 56 40	3102	74 24 47	3104	75 52 52	3105	77 20 55	3107
	Pollux	W.	28 43 29	3074	30 12 10	3076	31 40 49	3078	33 9 26	3078
	Sun	E.	35 37 29	3466	34 16 27	3471	32 55 31	3476	31 34 40	3480
23	Sun	W.	19 20 18	3452	20 41 36	3439	22 3 8	3426	23 24 55	3414
	Antares	E.	48 42 48	3013	47 12 51	3007	45 42 47	3002	44 12 37	2998
	Mars	E.	56 13 38	3256	54 48 35	3251	53 23 26	3246	51 58 11	3241
	Saturn	E.	96 25 33	3013	94 55 36	3008	93 25 33	3003	91 55 24	2998
	α Aquilæ	E.	97 49 37	3848	96 35 24	3837	95 21 0	3828	94 6 27	3820
24	Sun	W.	30 17 7	3360	31 40 9	3351	33 3 22	3341	34 26 46	3332
	Antares	E.	36 40 18	2972	35 9 30	2967	33 38 36	2962	32 7 35	2957
	Mars	E.	44 50 17	3210	43 24 20	3204	41 58 16	3197	40 32 3	3190
	Saturn	E.	84 22 59	2969	82 52 8	2963	81 21 9	2958	79 50 3	2950
	α Aquilæ	E.	87 51 48	3790	86 36 35	3787	85 21 19	3784	84 6 0	3781
	Fomalhaut	E.	118 36 16	3187	117 9 51	3174	115 43 11	3163	114 16 17	3150
25	Sun	W.	41 26 29	3284	42 50 59	3274	44 15 41	3265	45 40 34	3254
	Mars	E.	33 18 51	3152	31 51 44	3144	30 24 28	3135	28 57 1	3127
	Saturn	E.	72 12 21	2915	70 40 21	2907	69 8 11	2899	67 35 51	2891
	α Aquilæ	E.	77 49 8	3785	76 33 50	3788	75 18 35	3792	74 3 24	3978
	Fomalhaut	E.	106 58 14	3093	105 29 56	3083	104 1 26	3072	102 32 42	3061
26	Sun	W.	52 48 3	3200	54 14 12	3189	55 40 34	3178	57 7 10	3166
	Saturn	E.	59 51 32	2848	58 18 7	2838	56 44 29	2829	55 10 39	2819
	α Aquilæ	E.	67 49 29	3848	66 35 16	3861	65 21 17	3878	64 7 35	3897
	Fomalhaut	E.	95 5 45	3008	93 35 42	2997	92 5 26	2987	90 34 57	2976
	α Pegasi	E.	114 17 13	3291	112 52 51	3270	111 28 4	3250	110 2 54	3231
27	Sun	W.	64 23 48	3103	65 51 54	3090	67 20 16	3077	68 48 54	3062
	Saturn	E.	47 18 16	2769	45 43 7	2759	44 7 45	2748	42 32 9	2737
	α Aquilæ	E.	58 4 37	4029	56 53 26	4067	55 42 52	4107	54 32 57	4151
	Fomalhaut	E.	82 59 10	2924	81 27 21	2913	79 55 19	2902	78 23 3	2892
	α Pegasi	E.	102 51 35	3143	101 24 17	3126	99 56 39	3110	98 28 41	3095
28	Sun	W.	76 16 27	2990	77 46 52	2976	79 17 35	2960	80 48 38	2944
	Saturn	E.	34 30 37	2686	32 53 38	2675	31 16 25	2666	29 38 59	2657
	α Aquilæ	E.	48 55 40	4465	47 51 17	4551	46 48 10	4648	45 46 26	4753
	Fomalhaut	E.	70 38 27	2842	69 4 53	2832	67 31 7	2823	65 57 9	2815
	α Pegasi	E.	91 4 15	3021	89 34 28	3007	88 4 24	2994	86 34 4	2981
29	Sun	W.	88 28 55	2864	90 2 0	2847	91 35 27	2831	93 9 15	2814
	Antares	W.	26 49 0	2547	28 29 8	2529	30 9 41	2512	31 50 38	2495
	Fomalhaut	E.	58 4 38	2778	56 29 41	2772	54 54 36	2767	53 19 25	2764
	α Pegasi	E.	78 58 28	2923	77 26 38	2912	75 54 35	2903	74 22 20	2894
30	Sun	W.	101 3 48	2729	102 39 50	2711	104 16 15	2694	105 53 3	2678
	Antares	W.	40 21 18	2411	42 4 37	2394	43 48 20	2378	45 32 27	2362
	Mars	W.	27 57 23	2627	29 35 41	2610	31 14 23	2593	32 53 28	2576
	Fomalhaut	E.	45 23 4	2771	43 47 58	2779	42 13 3	2791	40 38 23	2807
	α Pegasi	E.	66 38 38	2864	65 5 33	2861	63 32 24	2859	61 59 13	2860
	α Arietis	E.	107 55 26	2486	106 13 53	2468	104 31 55	2451	102 49 33	2434

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Sun	E.	41° 2′ 30″	3446	39° 41′ 6″	3452	38° 19′ 48″	3457	36° 58′ 36″	3462
18	α Arietis	W.	109 1 52	3160	110 28 49	3163	111 55 43	3166	113 22 33	3169
	Aldebaran	W.	78 48 56	3109	80 16 55	3110	81 44 53	3110	83 12 50	3112
	Pollux	W.	34 38 2	3079	36 6 37	3081	37 35 10	3082	39 3 42	3083
	Sun	E.	30 13 54	3486	28 53 14	3490	27 32 39	3496	26 12 10	3502
23	Sun	W.	24 46 56	3402	26 9 10	3391	27 31 37	3380	28 54 16	3370
	Antares	E.	42 42 22	2993	41 12 1	2988	39 41 33	2983	38 10 59	2977
	Mars	E.	50 32 50	3235	49 7 22	3230	47 41 48	3223	46 16 6	3217
	Saturn	E.	90 25 9	2993	88 54 47	2987	87 24 18	2981	85 53 42	2976
	α Aquilæ	E.	92 51 45	3812	91 36 55	3806	90 21 59	3799	89 6 56	3794
24	Sun	W.	35 50 20	3323	37 14 5	3313	38 38 2	3303	40 2 10	3294
	Antares	E.	30 36 28	2951	29 5 14	2946	27 33 53	2940	26 2 25	2935
	Mars	E.	39 5 42	3183	37 39 13	3176	36 12 35	3168	34 45 48	3160
	Saturn	E.	78 18 48	2944	76 47 25	2937	75 15 53	2930	73 44 12	2922
	α Aquilæ	E.	82 50 38	3780	81 35 15	3780	80 19 52	3780	79 4 29	3782
	Fomalhaut	E.	112 49 8	3138	111 21 45	3128	109 54 9	3116	108 26 19	3104
25	Sun	W.	47 5 39	3244	48 30 56	3233	49 56 26	3223	51 22 8	3212
	Mars	E.	27 29 24	3118	26 1 36	3109	24 33 37	3100	23 5 27	3091
	Saturn	E.	66 3 21	2883	64 30 40	2875	62 57 49	2866	61 24 46	2857
	α Aquilæ	E.	72 48 20	3805	71 33 23	3813	70 18 34	3822	69 3 55	3835
	Fomalhaut	E.	101 3 45	3051	99 34 35	3039	98 5 11	3029	96 35 34	3019
26	Sun	W.	58 34 0	3153	60 1 5	3142	61 28 24	3129	62 55 58	3116
	Saturn	E.	53 36 36	2810	52 2 21	2800	50 27 53	2789	48 53 11	2779
	α Aquilæ	E.	62 54 12	3918	61 41 10	3941	60 28 32	3967	59 16 20	3997
	Fomalhaut	E.	89 4 14	2965	87 33 18	2954	86 2 8	2944	84 30 45	2935
	α Pegasi	E.	108 37 21	3212	107 11 26	3194	105 45 10	3177	104 18 33	3159
27	Sun	W.	70 17 50	3048	71 47 3	3034	73 16 33	3020	74 46 21	3005
	Saturn	E.	40 56 18	2726	39 20 13	2716	37 43 55	2706	36 7 23	2695
	α Aquilæ	E.	53 23 44	4201	52 15 19	4258	51 7 47	4319	50 1 12	4388
	Fomalhaut	E.	76 50 34	2881	75 17 51	2872	73 44 56	2862	72 11 48	2852
	α Pegasi	E.	97 0 25	3079	95 31 50	3064	94 2 56	3049	92 33 44	3035
28	Sun	W.	82 20 1	2928	83 51 44	2912	85 23 47	2896	86 56 11	2880
	Saturn	E.	28 1 22	2649	26 23 34	2643	24 45 37	2638	23 7 33	2636
	α Aquilæ	E.	44 46 11	4874	43 47 35	5009	42 50 47	5161	41 55 56	5335
	Fomalhaut	E.	64 23 0	2805	62 48 39	2798	61 14 8	2790	59 39 27	2784
	α Pegasi	E.	85 3 27	2969	83 32 35	2956	82 1 27	2944	80 30 4	2934
29	Sun	W.	94 43 25	2797	96 17 57	2779	97 52 52	2763	99 28 9	2746
	Antares	W.	33 31 58	2478	35 13 42	2461	36 55 50	2444	38 38 22	2427
	Fomalhaut	E.	51 44 10	2763	50 8 53	2761	48 33 34	2763	46 58 17	2766
	α Pegasi	E.	72 49 54	2887	71 17 18	2879	69 44 32	2873	68 11 38	2868
30	Sun	W.	107 30 13	2660	109 7 46	2643	110 45 42	2626	112 24 1	2610
	Antares	W.	47 16 57	2345	49 1 51	2329	50 47 8	2313	52 32 48	2297
	Mars	W.	34 32 56	2559	36 12 47	2543	37 53 1	2526	39 33 38	2510
	Fomalhaut	E.	39 4 4	2826	37 30 10	2851	35 56 48	2882	34 24 6	2920
	α Pegasi	E.	60 26 3	2862	58 52 56	2866	57 19 53	2872	55 46 58	2882
	α Arietis	E.	101 6 47	2417	99 23 37	2401	97 40 4	2384	95 56 7	2368

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	12 30 42.87	9.060	S. 3 19 6.5	58.24	16 1.64	64.39	10 24.24	0.794
Thur.	2	12 34 20.46	9.073	3 42 23.3	58.14	16 1.92	64.43	10 43.14	0.782
Frid.	3	12 37 58.35	9.086	4 5 37.6	58.03	16 2.21	64.48	11 1.76	0.768
Sat.	4	12 41 36.58	9.101	4 28 48.6	57.90	16 2.49	64.53	11 20.04	0.754
Sun.	5	12 45 15.15	9.115	4 51 56.4	57.75	16 2.77	64.59	11 37.98	0.739
Mon.	6	12 48 54.10	9.131	5 15 0.5	57.60	16 3.05	64.64	11 55.53	0.724
Tues.	7	12 52 33.44	9.147	5 38 0.8	57.42	16 3.32	64.70	12 12.68	0.707
Wed.	8	12 56 13.21	9.166	6 0 56.8	57.23	16 3.60	64.76	12 29.42	0.688
Thur.	9	12 59 53.42	9.185	6 23 47.9	57.03	16 3.87	64.83	12 45.72	0.669
Frid.	10	13 3 34.10	9.205	6 46 34.0	56.81	16 4.14	64.90	13 1.55	0.649
Sat.	11	13 7 15.26	9.225	7 9 14.8	56.58	16 4.41	64.97	13 16.91	0.629
Sun.	12	13 10 56.92	9.247	7 31 49.9	56.34	16 4.68	65.04	13 31.77	0.607
Mon.	13	13 14 39.12	9.269	7 54 18.8	56.07	16 4.95	65.12	13 46.07	0.585
Tues.	14	13 18 21.87	9.292	8 16 41.4	55.79	16 5.22	65.20	13 59.84	0.562
Wed.	15	13 22 5.19	9.316	8 38 57.3	55.51	16 5.49	65.28	14 13.03	0.538
Thur.	16	13 25 49.08	9.341	9 1 6.0	55.20	16 5.76	65.36	14 25.65	0.514
Frid.	17	13 29 33.59	9.366	9 23 6.9	54.87	16 6.03	65.45	14 37.67	0.488
Sat.	18	13 33 18.71	9.392	9 44 59.8	54.54	16 6.30	65.54	14 49.08	0.462
Sun.	19	13 37 4.45	9.419	10 6 44.3	54.17	16 6.56	65.63	14 59.86	0.435
Mon.	20	13 40 50.83	9.446	10 28 20.0	53.79	16 6.83	65.72	15 10.01	0.408
Tues.	21	13 44 37.87	9.473	10 49 46.3	53.40	16 7.10	65.82	15 19.50	0.381
Wed.	22	13 48 25.58	9.501	11 11 3.1	52.99	16 7.37	65.91	15 28.32	0.353
Thur.	23	13 52 13.96	9.530	11 32 9.8	52.56	16 7.63	66.01	15 36.46	0.325
Frid.	24	13 56 3.04	9.559	11 53 5.8	52.11	16 7.90	66.11	15 43.91	0.296
Sat.	25	13 59 52.82	9.589	12 13 51.0	51.64	16 8.16	66.22	15 50.68	0.266
Sun.	26	14 3 43.32	9.618	12 34 24.8	51.16	16 8.43	66.32	15 56.72	0.237
Mon.	27	14 7 34.53	9.649	12 54 46.7	50.65	16 8.69	66.43	16 2.05	0.206
Tues.	28	14 11 26.47	9.680	13 14 56.3	50.13	16 8.95	66.54	16 6.65	0.175
Wed.	29	14 15 19.16	9.710	13 34 53.5	49.61	16 9.21	66.65	16 10.51	0.144
Thur.	30	14 19 12.61	9.743	13 54 37.7	49.05	16 9.47	66.76	16 13.60	0.112
Frid.	31	14 23 6.83	9.775	14 14 8.4	48.48	16 9.73	66.88	16 15.92	0.080
Sat.	32	14 27 1.83	9.808	S. 14 33 25.2	47.90	16 9.98	66.99	16 17.47	0.047

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	12 30 44.43	9.062	S. 3 19 16.6	58.25	10 24.37	0.794	12 41 8.80
Thur.	2	12 34 22.07	9.074	3 42 33.6	58.15	10 43.28	0.782	12 45 5.35
Frid.	3	12 38 0.01	9.088	4 5 48.1	58.04	11 1.90	0.768	12 49 1.91
Sat.	4	12 41 38.28	9.102	4 28 59.4	57.91	11 20.18	0.754	12 52 58.46
Sun.	5	12 45 16.90	9.117	4 52 7.5	57.76	11 38.12	0.739	12 56 55.02
Mon.	6	12 48 55.90	9.132	5 15 11.9	57.61	11 55.67	0.724	13 0 51.57
Tues.	7	12 52 35.29	9.149	5 38 12.4	57.43	12 12.84	0.707	13 4 48.13
Wed.	8	12 56 15.11	9.168	6 1 8.6	57.24	12 29.56	0.688	13 8 44.67
Thur.	9	12 59 55.37	9.187	6 24 0.0	57.04	12 45.86	0.669	13 12 41.23
Frid.	10	13 3 36.09	9.207	6 46 46.3	56.82	13 1.69	0.649	13 16 37.78
Sat.	11	13 7 17.29	9.227	7 9 27.3	56.59	13 17.05	0.629	13 20 34.34
Sun.	12	13 10 58.98	9.249	7 32 2.6	56.35	13 31.91	0.607	13 24 30.89
Mon.	13	13 14 41.24	9.271	7 54 31.7	56.08	13 46.20	0.585	13 28 27.44
Tues.	14	13 18 24.03	9.294	8 16 54.4	55.80	13 59.97	0.562	13 32 24.00
Wed.	15	13 22 7.39	9.318	8 39 10.4	55.52	14 13.16	0.538	13 36 20.55
Thur.	16	13 25 51.32	9.342	9 1 19.2	55.21	14 25.79	0.514	13 40 17.11
Frid.	17	13 29 35.86	9.368	9 23 20.2	54.88	14 37.80	0.488	13 44 13.66
Sat.	18	13 33 21.02	9.394	9 45 12.2	54.54	14 49.20	0.462	13 48 10.22
Sun.	19	13 37 6.80	9.421	10 6 57.8	54.17	14 59.97	0.435	13 52 6.77
Mon.	20	13 40 53.21	9.448	10 28 33.6	53.79	15 10.12	0.408	13 56 3.33
Tues.	21	13 44 40.28	9.475	10 50 0.0	53.40	15 19.60	0.381	13 59 59.88
Wed.	22	13 48 28.02	9.503	11 11 16.8	52.99	15 28.41	0.353	14 3 56.43
Thur.	23	13 52 16.44	9.531	11 32 23.5	52.56	15 36.55	0.325	14 7 52.99
Frid.	24	13 56 5.54	9.560	11 53 19.5	52.11	15 44.00	0.296	14 11 49.54
Sat.	25	13 59 55.35	9.590	12 14 4.6	51.64	15 50.75	0.266	14 15 46.10
Sun.	26	14 3 45.87	9.619	12 34 38.4	51.16	15 56.78	0.237	14 19 42.65
Mon.	27	14 7 37.10	9.650	12 55 0.2	50.65	16 2.11	0.206	14 23 39.21
Tues.	28	14 11 29.06	9.681	13 15 9.8	50.13	16 6.70	0.175	14 27 35.76
Wed.	29	14 15 21.77	9.712	13 35 6.9	49.61	16 10.55	0.144	14 31 32.32
Thur.	30	14 19 15.24	9.744	13 54 51.0	49.05	16 13.63	0.112	14 35 28.87
Frid.	31	14 23 9.48	9.776	14 14 21.5	48.48	16 15.95	0.080	14 39 25.43
Sat.	32	14 27 4.49	9.809	S. 14 33 38.2	47.90	16 17.49	0.047	14 43 21.98

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour.
+9ˢ.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
1	274	188° 22′ 25″.3	22′ 0″.3	147″.69	−0″.55	0.0001605	−53.1	11ʰ 16ᵐ 59ˢ.98
2	275	189 21 30.7	21 5.6	147.77	0.54	0.0000332	53.0	11 13 4.07
3	276	190 20 37.9	20 12.7	147.84	0.50	9.9999061	52.9	11 9 8.16
4	277	191 19 47.1	19 21.8	147.92	0.44	.9997796	52.7	11 5 12.25
5	278	192 18 58.1	18 32.7	148.00	0.36	.9996535	52.4	11 1 16.34
6	279	193 18 11.0	17 45.5	148.08	0.26	.9995281	52.2	10 57 20.43
7	280	194 17 25.9	17 0.3	148.17	−0.14	.9994033	51.9	10 53 24.52
8	281	195 16 42.9	16 17.2	148.25	0.00	.9992792	51.6	10 49 28.61
9	282	196 16 2.1	15 36.3	148.34	+0.13	.9991558	51.3	10 45 32.71
10	283	197 15 23.6	14 57.7	148.43	0.25	.9990331	51.0	10 41 36.81
11	284	198 14 47.4	14 21.4	148.52	0.37	.9989111	50.7	10 37 40.90
12	285	199 14 13.4	13 47.3	148.62	0.48	.9987896	50.5	10 33 44.99
13	286	200 13 41.8	13 15.6	148.72	0.57	.9986686	50.3	10 29 49.08
14	287	201 13 12.4	12 46.1	148.82	0.63	.9985480	50.2	10 25 53.18
15	288	202 12 45.3	12 18.9	148.92	0.65	.9984276	50.1	10 21 57.27
16	289	203 12 20.5	11 54.0	149.02	0.64	.9983074	50.0	10 18 1.36
17	290	204 11 57.9	11 31.2	149.12	0.59	.9981873	50.0	10 14 5.45
18	291	205 11 37.6	11 10.8	149.21	0.52	.9980672	50.0	10 10 9.55
19	292	206 11 19.5	10 52.6	149.29	0.43	.9979471	50.0	10 6 13.64
20	293	207 11 3.5	10 36.5	149.38	0.31	.9978271	50.0	10 2 17.73
21	294	208 10 49.6	10 22.5	149.46	0.19	.9977071	50.0	9 58 21.82
22	295	209 10 37.7	10 10.4	149.54	+0.05	.9975872	50.0	9 54 25.91
23	296	210 10 27.7	10 0.3	149.62	−0.08	.9974674	49.9	9 50 30.00
24	297	211 10 19.5	9 52.0	149.70	0.21	.9973477	49.8	9 46 34.09
25	298	212 10 13.1	9 45.5	149.77	0.32	.9972282	49.7	9 42 38.18
26	299	213 10 8.4	9 40.6	149.84	0.41	.9971092	49.5	9 38 42.27
27	300	214 10 5.4	9 37.4	149.91	0.48	.9969905	49.2	9 34 46.36
28	301	215 10 4.0	9 35.9	149.98	0.52	.9968726	48.9	9 30 50.45
29	302	216 10 4.2	9 36.0	150.04	0.53	.9967557	48.5	9 26 54.54
30	303	217 10 5.9	9 37.6	150.11	0.50	.9966398	48.0	9 22 58.64
31	304	218 10 9.3	9 40.8	150.17	0.44	.9965251	47.5	9 19 2.73
32	305	219 10 14.4	9 45.7	150.24	−0.36	9.9964117	−46.9	9 15 6.82

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
—9ˢ.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 11.8	16 18.2	59 20.1	+2.01	59 43.7	+1.90	8 2.1	2.45	9.8
2	16 24.2	16 29.6	60 5.6	1.74	60 25.3	1.53	8 59.8	2.36	10.8
3	16 34.2	16 37.8	60 42.2	1.26	60 55.5	0.95	9 55.2	2.26	11.8
4	16 40.4	16 41.7	61 4.9	+0.60	61 9.9	+0.22	10 48.4	2.18	12.8
5	16 41.8	16 40.6	61 10.2	−0.18	61 5.8	−0.57	11 40.3	2.15	13.8
6	16 38.1	16 34.4	60 56.7	0.95	60 43.1	1.31	12 32.0	2.17	14.8
7	16 29.6	16 23.9	60 25.5	1.63	60 4.3	1.90	13 24.6	2.22	15.8
8	16 17.3	16 10.1	59 40.2	2.11	59 13.8	2.27	14 18.6	2.29	16.8
9	16 2.5	15 54.7	58 45.9	2.37	58 17.1	[illegible]41	15 14.2	2.35	17.8
10	15 46.8	15 39.0	57 48.2	2.40	57 19.7	2.34	16 10.8	2.36	18.8
11	15 31.5	15 24.4	56 52.1	2.24	56 25.9	2.11	17 6.9	2.31	19.8
12	15 17.7	15 11.6	56 1.5	1.96	55 39.0	1.78	18 1.2	2.21	20.8
13	15 6.1	15 1.2	55 18.8	1.59	55 0.9	1.39	18 52.6	2.07	21.8
14	14 57.0	14 53.5	54 45.4	1.19	54 32.3	0.99	19 40.7	1.93	22.8
15	14 50.6	14 48.3	54 21.6	0.79	54 13.3	0.60	20 25.5	1.81	23.8
16	14 46.6	14 45.6	54 7.3	0.41	54 3.5	−0.23	21 7.7	1.72	24.8
17	14 45.2	14 45.3	54 1.8	−0.06	54 2.1	+0.10	21 48.1	1.66	25.8
18	14 45.8	14 46.8	54 4.2	+0.24	54 7.9	0.38	22 27.7	1.64	26.8
19	14 48.2	14 50.0	54 13.1	0.50	54 19.7	0.60	23 7.5	1.67	27.8
20	14 52.2	14 54.6	54 27.6	0.70	54 36.6	0.79	23 48.4	1.74	28.8
21	14 57.3	15 0.3	54 46.6	0.87	54 57.4	0.94	☌		0.0
22	15 3.4	15 6.8	55 9.0	1.00	55 21.4	1.06	0 31.4	1.85	1.0
23	15 10.4	15 14.1	55 34.5	1.12	55 48.3	1.17	1 17.5	1.99	2.0
24	15 18.1	15 22.2	56 2.7	1.23	56 17.8	1.28	2 7.2	2.15	3.0
25	15 26.5	15 30.9	56 33.5	1.34	56 49.9	1.39	3 0.6	2.30	4.0
26	15 35.5	15 40.3	57 6.8	1.43	57 24.3	1.47	3 57.3	2.41	5.0
27	15 45.2	15 50.2	57 42.2	1.51	58 0.5	1.54	4 55.6	2.44	6.0
28	15 55.2	16 0.2	58 19.1	1.55	58 37.6	1.53	5 53.8	2.40	7.0
29	16 5.2	16 10.0	58 55.8	1.50	59 13.5	1.44	6 50.3	2.31	8.0
30	16 14.6	16 18.8	59 30.3	1.35	59 45.7	1.22	7 44.4	2.21	9.0
31	16 22.5	16 25.6	59 59.3	1.05	60 10.7	0.84	8 36.4	2.13	10.0
32	16 28.0	16 29.5	60 19.4	+0.60	60 25.1	+0.33	9 27.0	2.10	11.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 24 12.48	2.5386	S. 24 31 46.3	7.637
1	20 26 44.73	2.5364	24 24 3.0	7.805
2	20 29 16.85	2.5341	24 16 9.7	7.972
3	20 31 48.83	2.5318	24 8 6.3	8.139
4	20 34 20.66	2.5293	23 59 53.0	8.304
5	20 36 52.35	2.5268	23 51 29.8	8.469
6	20 39 23.88	2.5242	23 42 56.7	8.633
7	20 41 55.26	2.5216	23 34 13.8	8.797
8	20 44 26.47	2.5188	23 25 21.1	8.959
9	20 46 57.51	2.5159	23 16 18.7	9.121
10	20 49 28.38	2.5130	23 7 6.6	9.281
11	20 51 59.07	2.5101	22 57 44.9	9.441
12	20 54 29.59	2.5071	22 48 13.7	9.599
13	20 56 59.93	2.5040	22 38 33.0	9.757
14	20 59 30.07	2.5008	22 28 42.9	9.913
15	21 2 0.02	2.4976	22 18 43.5	10.068
16	21 4 29.78	2.4943	22 8 34.7	10.222
17	21 6 59.34	2.4910	21 58 16.7	10.376
18	21 9 28.70	2.4876	21 47 49.6	10.528
19	21 11 57.86	2.4842	21 37 13.4	10.678
20	21 14 26.81	2.4808	21 26 28.3	10.827
21	21 16 55.55	2.4773	21 15 34.2	10.976
22	21 19 24.09	2.4738	21 4 31.2	11.123
23	21 21 52.41	2.4702	S. 20 53 19.5	11.268

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 24 20.51	2.4666	S. 20 41 59.0	11.412
1	21 26 48.39	2.4629	20 30 29.9	11.556
2	21 29 16.06	2.4593	20 18 52.3	11.698
3	21 31 43.51	2.4556	20 7 6.3	11.838
4	21 34 10.73	2.4519	19 55 11.8	11.977
5	21 36 37.73	2.4481	19 43 9.0	12.114
6	21 39 4.50	2.4443	19 30 58.1	12.250
7	21 41 31.04	2.4405	19 18 39.0	12.385
8	21 43 57.36	2.4367	19 6 11.9	12.518
9	21 46 23.45	2.4329	18 53 36.9	12.649
10	21 48 49.31	2.4291	18 40 54.0	12.779
11	21 51 14.94	2.4253	18 28 3.3	12.908
12	21 53 40.34	2.4215	18 15 5.0	13.035
13	21 56 5.51	2.4176	18 1 59.1	13.161
14	21 58 30.45	2.4138	17 48 45.7	13.285
15	22 0 55.16	2.4099	17 35 24.9	13.407
16	22 3 19.64	2.4061	17 21 56.9	13.528
17	22 5 43.89	2.4023	17 8 21.7	13.647
18	22 8 7.91	2.3985	16 54 39.3	13.764
19	22 10 31.70	2.3946	16 40 49.9	13.880
20	22 12 55.26	2.3908	16 26 53.7	13.994
21	22 15 18.59	2.3870	16 12 50.7	14.106
22	22 17 41.70	2.3832	15 58 41.0	14.217
23	22 20 4.58	2.3795	15 44 24.7	14.326
24	22 22 27.24	2.3757	S. 15 30 1.9	14.433

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 22 27.24	2.3757	S. 15 30 1.9	14.433
1	22 24 49.67	2.3720	15 15 32.8	14.538
2	22 27 11.88	2.3683	15 0 57.3	14.642
3	22 29 33.87	2.3647	14 46 15.6	14.745
4	22 31 55.65	2.3611	14 31 27.9	14.845
5	22 34 17.21	2.3575	14 16 34.2	14.943
6	22 36 38.55	2.3539	14 1 34.7	15.039
7	22 38 59.67	2.3503	13 46 29.5	15.134
8	22 41 20.59	2.3468	13 31 18.6	15.227
9	22 43 41.30	2.3434	13 16 2.2	15.318
10	22 46 1.80	2.3400	13 0 40.4	15.407
11	22 48 22.10	2.3366	12 45 13.3	15.495
12	22 50 42.19	2.3332	12 29 41.0	15.581
13	22 53 2.08	2.3299	12 14 3.6	15.664
14	22 55 21.78	2.3267	11 58 21.3	15.746
15	22 57 41.28	2.3235	11 42 34.2	15.826
16	23 0 0.60	2.3203	11 26 42.2	15.904
17	23 2 19.73	2.3172	11 10 45.6	15.980
18	23 4 38.66	2.3141	10 54 44.6	16.054
19	23 6 57.41	2.3111	10 38 39.2	16.126
20	23 9 15.99	2.3081	10 22 29.5	16.196
21	23 11 34.39	2.3052	10 6 15.7	16.264
22	23 13 52.61	2.3024	9 49 57.8	16.331
23	23 16 10.67	2.2996	S. 9 33 36.0	16.396

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 18 28.56	2.2968	S. 9 17 10.3	16.458
1	23 20 46.29	2.2941	9 0 41.0	16.518
2	23 23 3.85	2.2914	8 44 8.1	16.577
3	23 25 21.26	2.2888	8 27 31.7	16.634
4	23 27 38.51	2.2863	8 10 52.0	16.689
5	23 29 55.62	2.2839	7 54 9.1	16.741
6	23 32 12.58	2.2815	7 37 23.1	16.791
7	23 34 29.40	2.2792	7 20 34.1	16.840
8	23 36 46.08	2.2769	7 3 42.3	16.887
9	23 39 2.63	2.2747	6 46 47.7	16.932
10	23 41 19.05	2.2726	6 29 50.5	16.974
11	23 43 35.34	2.2705	6 12 50.8	17.014
12	23 45 51.51	2.2685	5 55 48.8	17.053
13	23 48 7.56	2.2666	5 38 44.5	17.090
14	23 50 23.50	2.2647	5 21 38.0	17.125
15	23 52 39.32	2.2628	5 4 29.5	17.157
16	23 54 55.04	2.2611	4 47 19.2	17.187
17	23 57 10.65	2.2594	4 30 7.1	17.216
18	23 59 26.17	2.2578	4 12 53.3	17.243
19	0 1 41.59	2.2563	3 55 38.0	17.267
20	0 3 56.93	2.2549	3 38 21.3	17.289
21	0 6 12.18	2.2535	3 21 3.3	17.310
22	0 8 27.35	2.2521	3 3 44.1	17.329
23	0 10 42.44	2.2508	2 46 23.9	17.345
24	0 12 57.45	2.2497	S. 2 29 2.7	17.359

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 12 57.45	2.2497	S. 2 29 2.7	17.359
1	0 15 12.39	2.2486	2 11 40.7	17.372
2	0 17 27.28	2.2476	1 54 18.1	17.382
3	0 19 42.11	2.2466	1 36 54.9	17.390
4	0 21 56.87	2.2457	1 19 31.3	17.396
5	0 24 11.58	2.2448	1 2 7.4	17.401
6	0 26 26.25	2.2441	0 44 43.2	17.403
7	0 28 40.87	2.2434	0 27 19.0	17.403
8	0 30 55.46	2.2428	S. 0 9 54.8	17.401
9	0 33 10.01	2.2423	N. 0 7 29.2	17.398
10	0 35 24.53	2.2418	0 24 52.9	17.392
11	0 37 39.02	2.2414	0 42 16.2	17.384
12	0 39 53.50	2.2411	0 59 39.0	17.374
13	0 42 7.96	2.2408	1 17 1.1	17.362
14	0 44 22.40	2.2406	1 34 22.5	17.348
15	0 46 36.83	2.2405	1 51 43.0	17.333
16	0 48 51.26	2.2405	2 9 2.5	17.316
17	0 51 5.69	2.2405	2 26 20.9	17.297
18	0 53 20.12	2.2406	2 43 38.1	17.275
19	0 55 34.56	2.2408	3 0 53.9	17.251
20	0 57 49.01	2.2410	3 18 8.2	17.225
21	1 0 3.48	2.2413	3 35 20.9	17.198
22	1 2 17.97	2.2417	3 52 32.0	17.169
23	1 4 32.49	2.2422	N. 4 9 41.2	17.138

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 6 47.03	2.2427	N. 4 26 48.5	17.104
1	1 9 1.60	2.2432	4 43 53.7	17.068
2	1 11 16.21	2.2438	5 0 56.7	17.031
3	1 13 30.86	2.2445	5 17 57.4	16.992
4	1 15 45.55	2.2453	5 34 55.8	16.951
5	1 18 0.29	2.2462	5 51 51.7	16.908
6	1 20 15.09	2.2471	6 8 44.8	16.863
7	1 22 29.94	2.2480	6 25 35.2	16.817
8	1 24 44.85	2.2490	6 42 22.8	16.769
9	1 26 59.82	2.2501	6 59 7.4	16.718
10	1 29 14.86	2.2512	7 15 49.0	16.666
11	1 31 29.97	2.2524	7 32 27.4	16.612
12	1 33 45.15	2.2537	7 49 2.4	16.556
13	1 36 0.41	2.2550	8 5 34.0	16.498
14	1 38 15.75	2.2564	8 22 2.2	16.438
15	1 40 31.18	2.2578	8 38 26.7	16.377
16	1 42 46.69	2.2593	8 54 47.4	16.313
17	1 45 2.30	2.2609	9 11 4.3	16.248
18	1 47 18.00	2.2625	9 27 17.2	16.181
19	1 49 33.80	2.2642	9 43 26.1	16.113
20	1 51 49.70	2.2659	9 59 30.8	16.043
21	1 54 5.70	2.2676	10 15 31.2	15.970
22	1 56 21.81	2.2694	10 31 27.2	15.896
23	1 58 38.03	2.2712	10 47 18.7	15.821
24	2 0 54.36	2.2731	N.11 3 5.7	15.743

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 0 54.36	2.2731	N.11 3 5.7	15.743
1	2 3 10.81	2.2751	11 18 48.0	15.664
2	2 5 27.37	2.2771	11 34 25.4	15.583
3	2 7 44.05	2.2791	11 49 57.9	15.501
4	2 10 0.86	2.2812	12 5 25.5	15.417
5	2 12 17.80	2.2833	12 20 48.0	15.332
6	2 14 34.86	2.2855	12 36 5.3	15.244
7	2 16 52.05	2.2877	12 51 17.3	15.155
8	2 19 9.38	2.2899	13 6 23.9	15.064
9	2 21 26.84	2.2922	13 21 25.0	14.972
10	2 23 44.44	2.2945	13 36 20.5	14.878
11	2 26 2.18	2.2968	13 51 10.3	14.783
12	2 28 20.06	2.2992	14 5 54.4	14.686
13	2 30 3[illegible].08	2.3016	14 20 32.6	14.587
14	2 32 56.25	2.3040	14 35 4.8	14.487
15	2 35 14.56	2.3064	14 49 31.0	14.385
16	2 37 33.02	2.3089	15 3 51.0	14.282
17	2 39 51.63	2.3114	15 18 4.8	14.178
18	2 42 10.39	2.3139	15 32 12.3	14.072
19	2 44 29.30	2.3164	15 46 13.4	13.964
20	2 46 48.36	2.3190	16 0 8.0	13.855
21	2 49 7.58	2.3216	16 13 56.0	13.744
22	2 51 26.95	2.3242	16 27 37.3	13.632
23	2 53 46.48	2.3268	N.16 41 11.9	13.519

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 56 6.16	2.3294	N.16 54 39.6	13.405
1	2 58 26.00	2.3320	17 8 0.4	13.289
2	3 0 46.00	2.3346	17 21 14.3	13.172
3	3 3 6.16	2.3373	17 34 21.1	13.053
4	3 5 26.47	2.3399	17 47 20.6	12.933
5	3 7 46.94	2.3425	18 0 12.9	12.812
6	3 10 7.57	2.3451	18 12 58.0	12.689
7	3 12 28.36	2.3478	18 25 35.7	12.565
8	3 14 49.31	2.3504	18 38 5.8	12.440
9	3 17 10.41	2.3530	18 50 28.4	12.313
10	3 19 31.67	2.3556	19 2 43.4	12.185
11	3 21 53.09	2.3582	19 14 50.7	12.057
12	3 24 14.66	2.3608	19 26 50.3	11.928
13	3 26 36.39	2.3634	19 38 42.1	11.797
14	3 28 58.27	2.3660	19 50 25.9	11.665
15	3 31 20.31	2.3686	20 2 1.7	11.531
16	3 33 42.50	2.3711	20 13 29.6	11.396
17	3 36 4.84	2.3736	20 24 49.4	11.261
18	3 38 27.33	2.3761	20 36 0.9	11.125
19	3 40 49.97	2.3786	20 47 4.2	10.987
20	3 43 12.76	2.3810	20 57 59.3	10.848
21	3 45 35.69	2.3833	21 8 46.1	10.708
22	3 47 58.76	2.3857	21 19 24.4	10.569
23	3 50 21.98	2.3881	21 29 54.3	10.428
24	3 52 45.33	2.3904	N.21 40 15.7	10.286

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 52 45.33	2.3904	N.21 40 15.7	10.286
1	3 55 8.82	2.3927	21 50 28.5	10.142
2	3 57 32.45	2.3949	22 0 32.7	9.998
3	3 59 56.21	2.3971	22 10 28.3	9.853
4	4 2 20.10	2.3992	22 20 15.1	9.707
5	4 4 44.12	2.4013	22 29 53.2	9.561
6	4 7 8.26	2.4034	22 39 22.4	9.413
7	4 9 32.53	2.4054	22 48 42.8	9.265
8	4 11 56.91	2.4073	22 57 54.2	9.116
9	4 14 21.41	2.4092	23 6 56.7	8.967
10	4 16 46.02	2.4110	23 15 50.2	8.816
11	4 19 10.74	2.4128	23 24 34.6	8.665
12	4 21 35.56	2.4146	23 33 10.0	8.513
13	4 24 0.49	2.4163	23 41 36.2	8.361
14	4 26 25.52	2.4179	23 49 53.3	8.208
15	4 28 50.64	2.4194	23 58 1.2	8.055
16	4 31 15.85	2.4209	24 5 59.9	7.901
17	4 33 41.15	2.4223	24 13 49.3	7.746
18	4 36 6.53	2.4236	24 21 29.4	7.591
19	4 38 31.99	2.4249	24 29 0.2	7.435
20	4 40 57.52	2.4261	24 36 21.6	7.279
21	4 43 23.12	2.4272	24 43 33.7	7.123
22	4 45 48.79	2.4283	24 50 36.4	6.966
23	4 48 14.52	2.4293	N.24 57 29.6	6.808

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 50 40.31	2.4302	N.25 4 13.4	6.651
1	4 53 6.15	2.4311	25 10 47.7	6.493
2	4 55 32.04	2.4318	25 17 12.5	6.335
3	4 57 57.97	2.4324	25 23 27.8	6.176
4	5 0 23.93	2.4330	25 29 33.6	6.017
5	5 2 49.93	2.4335	25 35 29.8	5.857
6	5 5 15.95	2.4339	25 41 16.4	5.698
7	5 7 42.00	2.4343	25 46 53.4	5.538
8	5 10 8.06	2.4345	25 52 20.9	5.378
9	5 12 34.13	2.4346	25 57 38.8	5.218
10	5 15 0.21	2.4347	26 2 47.1	5.058
11	5 17 26.29	2.4347	26 7 45.8	4.898
12	5 19 52.37	2.4345	26 12 34.9	4.738
13	5 22 18.44	2.4343	26 17 14.4	4.578
14	5 24 44.49	2.4340	26 21 44.2	4.418
15	5 27 10.52	2.4336	26 26 4.4	4.257
16	5 29 36.52	2.4331	26 30 15.0	4.097
17	5 32 2.49	2.4325	26 34 16.0	3.936
18	5 34 28.42	2.4318	26 38 7.3	3.776
19	5 36 54.31	2.4311	26 41 49.0	3.615
20	5 39 20.15	2.4302	26 45 21.1	3.455
21	5 41 45.93	2.4292	26 48 43.6	3.295
22	5 44 11.66	2.4281	26 51 56.5	3.135
23	5 46 37.32	2.4270	26 54 59.8	2.976
24	5 49 2.90	2.4258	N.26 57 53.6	2.816

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 49 2.90	2.4258	N.26 57 53.6	2.816
1	5 51 28.41	2.4244	27 0 37.8	2.656
2	5 53 53.83	2.4229	27 3 12.3	2.497
3	5 56 19.16	2.4214	27 5 37.3	2.338
4	5 58 44.40	2.4198	27 7 52.9	2.180
5	6 1 9.54	2.4181	27 9 59.0	2.022
6	6 3 34.57	2.4162	27 11 55.5	1.864
7	6 5 59.49	2.4143	27 13 42.6	1.706
8	6 8 24.29	2.4123	27 15 20.2	1.549
9	6 10 48.96	2.4102	27 16 48.4	1.392
10	6 13 13.51	2.4080	27 18 7.2	1.236
11	6 15 37.93	2.4057	27 19 16.7	1.080
12	6 18 2.20	2.4033	27 20 16.8	0.924
13	6 20 26.32	2.4008	27 21 7.6	0.768
14	6 22 50.30	2.3982	27 21 49.0	0.614
15	6 25 14.12	2.3956	27 22 21.2	0.460
16	6 27 37.77	2.3929	27 22 44.2	0.306
17	6 30 1.26	2.3901	27 22 58.0	+0.153
18	6 32 24.58	2.3872	27 23 2.6	0.000
19	6 34 47.72	2.3842	27 22 58.1	−0.152
20	6 37 10.68	2.3810	27 22 44.4	0.303
21	6 39 33.45	2.3778	27 22 21.7	0.453
22	6 41 56.02	2.3745	27 21 50.0	0.603
23	6 44 18.39	2.3712	N.27 21 9.3	0.753

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 46 40.57	2.3678	N.27 20 19.6	0.902
1	6 49 2.54	2.3643	27 19 21.0	1.051
2	6 51 24.29	2.3607	27 18 13.5	1.198
3	6 53 45.83	2.3571	27 16 57.2	1.345
4	6 56 7.14	2.3533	27 15 32.1	1.491
5	6 58 28.22	2.3495	27 13 58.3	1.637
6	7 0 49.08	2.3456	27 12 15.7	1.782
7	7 3 9.70	2.3417	27 10 24.4	1.926
8	7 5 30.09	2.3377	27 8 24.6	2.069
9	7 7 50.23	2.3336	27 6 16.2	2.211
10	7 10 10.12	2.3294	27 3 59.3	2.352
11	7 12 29.76	2.3252	27 1 33.9	2.493
12	7 14 49.15	2.3209	26 59 0.1	2.633
13	7 17 8.28	2.3166	26 56 17.9	2.773
14	7 19 27.14	2.3122	26 53 27.3	2.911
15	7 21 45.74	2.3078	26 50 28.5	3.049
16	7 24 4.07	2.3033	26 47 21.4	3.186
17	7 26 22.13	2.2987	26 44 6.1	3.323
18	7 28 39.91	2.2940	26 40 42.7	3.458
19	7 30 57.41	2.2893	26 37 11.2	3.592
20	7 33 14.63	2.2846	26 33 31.7	3.725
21	7 35 31.56	2.2798	26 29 44.2	3.858
22	7 37 48.21	2.2750	26 25 48.8	3.989
23	7 40 4.57	2.2702	26 21 45.6	4.119
24	7 42 20.63	2.2653	N.26 17 34.5	4.249

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 13.					WEDNESDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 42 20.63	2.2653	N.26 17 34.5	4.249	0	9 25 2.00	2.0133	N.20 42 1.8	9.364
1	7 44 36.40	2.2603	26 13 15.6	4.378	1	9 27 2.65	2.0083	20 32 37.4	9.448
2	7 46 51.86	2.2553	26 8 49.1	4.506	2	9 29 3.00	2.0033	20 23 8.0	9.531
3	7 49 7.02	2.2503	26 4 14.9	4.633	3	9 31 3.05	1.9984	20 13 33.7	9.612
4	7 51 21.89	2.2453	25 59 33.1	4.759	4	9 33 2.81	1.9935	20 3 54.5	9.693
5	7 53 36.46	2.2402	25 54 43.8	4.884	5	9 35 2.28	1.9887	19 54 10.5	9.773
6	7 55 50.71	2.2350	25 49 47.0	5.008	6	9 37 1.46	1.9839	19 44 21.8	9.852
7	7 58 4.65	2.2298	25 44 42.8	5.132	7	9 39 0.35	1.9792	19 34 28.3	9.931
8	8 0 18.29	2.2247	25 39 31.1	5.255	8	9 40 58.96	1.9745	19 24 30.1	10.008
9	8 2 31.62	2.2195	25 34 12.1	5.377	9	9 42 57.29	1.9698	19 14 27.3	10.083
10	8 4 44.63	2.2143	25 28 45.9	5.497	10	9 44 55.34	1.9652	19 4 20.1	10.158
11	8 6 57.33	2.2090	25 23 12.5	5.616	11	9 46 53.11	1.9606	18 54 8.4	10.233
12	8 9 9.71	2.2037	25 17 32.0	5.734	12	9 48 50.61	1.9560	18 43 52.1	10.307
13	8 11 21.77	2.1984	25 11 44.4	5.852	13	9 50 47.83	1.9515	18 33 31.4	10.380
14	8 13 33 52	2.1931	25 5 49.8	5.969	14	9 52 44.79	1.9470	18 23 6.5	10.452
15	8 15 44.95	2.1878	24 59 48.2	6.085	15	9 54 41.48	1.9426	18 12 37.3	10.523
16	8 17 56.06	2.1825	24 53 39.6	6.200	16	9 56 37.90	1.9382	18 2 3.7	10.593
17	8 20 6.85	2.1771	24 47 24.2	6.313	17	9 58 34.06	1.9338	17 51 25.9	10.663
18	8 22 17.31	2.1717	24 41 2.0	6.426	18	10 0 29.96	1.9295	17 40 44.1	10.732
19	8 24 27.45	2.1663	24 34 33.1	6.538	19	10 2 25.60	1.9252	17 29 58.2	10.799
20	8 26 37.27	2.1610	24 27 57.5	6.649	20	10 4 20.99	1.9210	17 19 8.2	10.866
21	8 28 46.77	2.1556	24 21 15.2	6.759	21	10 6 16.13	1.9169	17 8 14.2	10.932
22	8 30 55.94	2.1502	24 14 26.4	6.868	22	10 8 11.02	1.9128	16 57 16.3	10.997
23	8 33 4.79	2.1448	N.24 7 31.1	6.976	23	10 10 5.67	1.9088	N.16 46 14.5	11.062
	TUESDAY 14.					THURSDAY 16.			
0	8 35 13.31	2.1394	N.24 0 29.3	7.083	0	10 12 0.07	1.9048	N.16 35 8.9	11.126
1	8 37 21.51	2.1340	23 53 21.1	7.188	1	10 13 54.23	1.9008	16 23 59.5	11.188
2	8 39 29.39	2.1286	23 46 6.7	7.293	2	10 15 48.16	1.8969	16 12 46.3	11.250
3	8 41 36.94	2.1232	23 38 46.0	7.397	3	10 17 41.85	1.8930	16 1 29.4	11.312
4	8 43 44.17	2.1178	23 31 19.0	7.500	4	10 19 35.32	1.8892	15 50 8.9	11.372
5	8 45 51.08	2.1124	23 23 45.8	7.603	5	10 21 28.56	1.8854	15 38 44.8	11.432
6	8 47 57.66	2.1070	23 16 6.6	7.705	6	10 23 21.57	1.8817	15 27 17.1	11.490
7	8 50 3.92	2.1017	23 8 21.3	7.806	7	10 25 14.36	1.8781	15 15 45.9	11.548
8	8 52 9.86	2.0963	23 0 29.9	7.905	8	10 27 6.94	1.8745	15 4 11.3	11.605
9	8 54 15.48	2.0910	22 52 32.6	8.003	9	10 28 59.30	1.8709	14 52 33.2	11.662
10	8 56 20.78	2.0856	22 44 29.6	8.099	10	10 30 51.45	1.8674	14 40 51.8	11.718
11	8 58 25.76	2.0803	22 36 20.8	8.195	11	10 32 43.39	1.8640	14 29 7.1	11.773
12	9 0 30.42	2.0750	22 28 6.2	8.291	12	10 34 35.13	1.8606	14 17 19.1	11.827
13	9 2 34.76	2.0698	22 19 45.9	8.386	13	10 36 26.67	1.8573	14 5 27.9	11.880
14	9 4 38.79	2.0645	22 11 19.9	8.480	14	10 38 18.01	1.8540	13 53 33.5	11.932
15	9 6 42.50	2.0593	22 2 48.3	8.573	15	10 40 9.16	1.8508	13 41 36.0	11.984
16	9 8 45.90	2.0541	21 54 11.2	8.664	16	10 42 0.11	1.8476	13 29 35.4	12.035
17	9 10 48.99	2.0489	21 45 28.6	8.755	17	10 43 50.87	1.8445	13 17 31.8	12.086
18	9 12 51.77	2.0437	21 36 40.6	8.845	18	10 45 41.45	1.8415	13 5 25.1	12.136
19	9 14 54.24	2.0386	21 27 47.2	8.934	19	10 47 31.85	1.8385	12 53 15.5	12.184
20	9 16 56.40	2.0335	21 18 48.5	9.022	20	10 49 22.07	1.8356	12 41 3.0	12.232
21	9 18 58.26	2.0284	21 9 44.6	9.109	21	10 51 12.12	1.8327	12 28 47.6	12.279
22	9 20 59.81	2.0233	21 0 35.4	9.195	22	10 53 1.99	1.8299	12 16 29.5	12.326
23	9 23 1.06	2.0183	20 51 21.1	9.280	23	10 54 51.70	1.8272	12 4 8.6	12.372
24	9 25 2.00	2.0133	N.20 42 1.8	9.364	24	10 56 41.25	1.8245	N.11 51 44.9	12.417

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 17.					SUNDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 56 41.25	1.8245	N. 11 51 44.9	12.417	0	12 22 18.61	1.7672	N. 1 17 42.7	13.724
1	10 58 30.63	1.8218	11 39 18.5	12.461	1	12 24 4.65	1.7676	1 3 59.0	13.733
2	11 0 19.86	1.8192	11 26 49.6	12.504	2	12 25 50.72	1.7680	0 50 14.7	13.742
3	11 2 8.93	1.8167	11 14 18.1	12.547	3	12 27 36.81	1.7685	0 36 29.9	13.751
4	11 3 57.86	1.8142	11 1 44.0	12.589	4	12 29 22.94	1.7691	0 22 44.6	13.758
5	11 5 46.64	1.8118	10 49 7.4	12.631	5	12 31 9.11	1.7697	N. 0 8 58.9	13.764
6	11 7 35.28	1.8095	10 36 28.3	12.671	6	12 32 55.31	1.7704	S. 0 4 47.1	13.769
7	11 9 23.78	1.8072	10 23 46.8	12.711	7	12 34 41.56	1.7712	0 18 33.4	13.774
8	11 11 12.15	1.8050	10 11 3.0	12.750	8	12 36 27.85	1.7720	0 32 20.0	13.778
9	11 13 0.38	1.8028	9 58 16.8	12.789	9	12 38 14.19	1.7728	0 46 6.9	13.782
10	11 14 48.49	1.8007	9 45 28.3	12.826	10	12 40 0.59	1.7737	0 59 53.9	13.785
11	11 16 36.47	1.7987	9 32 37.6	12.863	11	12 41 47.05	1.7748	1 13 41.1	13.787
12	11 18 24.33	1.7967	9 19 44.7	12.899	12	12 43 33.57	1.7759	1 27 28.3	13.788
13	11 20 12.07	1.7948	9 6 49.7	12.935	13	12 45 20.16	1.7771	1 41 15.6	13.788
14	11 21 59.70	1.7930	8 53 52.5	12.969	14	12 47 6.82	1.7783	1 55 2.9	13.788
15	11 23 47.22	1.7912	8 40 53.3	13.003	15	12 48 53.55	1.7795	2 8 50.2	13.787
16	11 25 34.64	1.7895	8 27 52.1	13.037	16	12 50 40.36	1.7809	2 22 37.3	13.785
17	11 27 21.95	1.7878	8 14 48.9	13.070	17	12 52 27.25	1.7823	2 36 24.3	13.781
18	11 29 9.17	1.7862	8 1 43.7	13.102	18	12 54 14.23	1.7838	2 50 11.0	13.777
19	11 30 56.29	1.7846	7 48 36.6	13.133	19	12 56 1.30	1.7853	3 3 57.5	13.773
20	11 32 43.32	1.7831	7 35 27.8	13.163	20	12 57 48.46	1.7869	3 17 43.8	13.768
21	11 34 30.26	1.7817	7 22 17.2	13.193	21	12 59 35.72	1.7885	3 31 29.7	13.762
22	11 36 17.12	1.7804	7 9 4.7	13.222	22	13 1 23.08	1.7902	3 45 15.2	13.755
23	11 38 3.90	1.7791	N. 6 55 50.5	13.251	23	13 3 10.55	1.7920	S. 3 59 0.3	13.747
	SATURDAY 18.					MONDAY 20.			
0	11 39 50.61	1.7778	N. 6 42 34.6	13.278	0	13 4 58.12	1.7939	S. 4 12 44.9	13.738
1	11 41 37.24	1.7766	6 29 17.1	13.305	1	13 6 45.80	1.7958	4 26 28.9	13.729
2	11 43 23.80	1.7755	6 15 58.0	13.331	2	13 8 33.61	1.7978	4 40 12.4	13.719
3	11 45 10.30	1.7745	6 2 37.3	13.357	3	13 10 21.54	1.7998	4 53 55.3	13.708
4	11 46 56.74	1.7735	5 49 15.2	13.381	4	13 12 9.59	1.8019	5 7 37.4	13.696
5	11 48 43.12	1.7726	5 35 51.6	13.405	5	13 13 57.77	1.8041	5 21 18.8	13.684
6	11 50 29.45	1.7717	5 22 26.6	13.429	6	13 15 46.08	1.8064	5 34 59.5	13.670
7	11 52 15.73	1.7709	5 9 0.2	13.452	7	13 17 34.53	1.8087	5 48 39.3	13.656
8	11 54 1.96	1.7702	4 55 32.4	13.473	8	13 19 23.12	1.8110	6 2 18.2	13.640
9	11 55 48.15	1.7695	4 42 3.3	13.494	9	13 21 11.85	1.8134	6 15 56.1	13.624
10	11 57 34.30	1.7689	4 28 33.1	13.514	10	13 23 0.73	1.8159	6 29 33.1	13.607
11	11 59 20.42	1.7684	4 15 1.7	13.534	11	13 24 49.76	1.8185	6 43 9.1	13.590
12	12 1 6.51	1.7679	4 1 29.0	13.553	12	13 26 38.95	1.8211	6 56 43.9	13.571
13	12 2 52.57	1.7675	3 47 55.2	13.572	13	13 28 28.30	1.8238	7 10 17.6	13.552
14	12 4 38.61	1.7672	3 34 20.4	13.589	14	13 30 17.81	1.8265	7 23 50.1	13.531
15	12 6 24.63	1.7669	3 20 44.5	13.606	15	13 32 7.49	1.8293	7 37 21.3	13.509
16	12 8 10.64	1.7667	3 7 7.7	13.622	16	13 33 57.33	1.8322	7 50 51.2	13.487
17	12 9 56.64	1.7665	2 53 29.9	13.637	17	13 35 47.35	1.8352	8 4 19.7	13.464
18	12 11 42.62	1.7664	2 39 51.2	13.652	18	13 37 37.55	1.8382	8 17 46.9	13.440
19	12 13 28.60	1.7664	2 26 11.7	13.666	19	13 39 27.93	1.8412	8 31 12.6	13.415
20	12 15 14.59	1.7665	2 12 31.3	13.679	20	13 41 18.50	1.8444	8 44 36.7	13.389
21	12 17 0.58	1.7666	1 58 50.2	13.691	21	13 43 9.26	1.8476	8 57 59.3	13.363
22	12 18 46.58	1.7667	1 45 8.4	13.703	22	13 45 0.21	1.8508	9 11 20.2	13.335
23	12 20 32.59	1.7669	1 31 25.9	13.714	23	13 46 51.35	1.8541	9 24 39.4	13.306
24	12 22 18.61	1.7672	N. 1 17 42.7	13.724	24	13 48 42.70	1.8575	S. 9 37 56.9	13.276

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 21.					**THURSDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 48 42.70	1.8575	S. 9 37 56.9	13.276	0	15 22 51.19	2.0845	S. 19 21 42.0	10.627
1	13 50 34.26	1.8610	9 51 12.5	13.245	1	15 24 56.43	2.0903	19 32 17.2	10.545
2	13 52 26.02	1.8645	10 4 26.3	13.214	2	15 27 2.02	2.0961	19 42 47.4	10.461
3	13 54 17.99	1.8680	10 17 38.2	13.182	3	15 29 7.96	2.1020	19 53 12.5	10.376
4	13 56 10.18	1.8716	10 30 48.1	13.148	4	15 31 14.26	2.1079	20 3 32.5	10.289
5	13 58 2.59	1.8753	10 43 56.0	13.113	5	15 33 20.91	2.1138	20 13 47.2	10.201
6	13 59 55.22	1.8791	10 57 1.7	13.077	6	15 35 27.91	2.1197	20 23 56.6	10.112
7	14 1 48.08	1.8829	11 10 5.2	13.041	7	15 37 35.27	2.1257	20 34 0.6	10.022
8	14 3 41.17	1.8868	11 23 6.6	13.004	8	15 39 42.99	2.1316	20 43 59.2	9.931
9	14 5 34.49	1.8907	11 36 5.7	12.966	9	15 41 51.07	2.1376	20 53 52.3	9.838
10	14 7 28.05	1.8947	11 49 2.5	12.926	10	15 43 59.50	2.1436	21 3 39.7	9.744
11	14 9 21.85	1.8987	12 1 56.9	12.886	11	15 46 8.29	2.1496	21 13 21.4	9.648
12	14 11 15.89	1.9028	12 14 48.8	12.844	12	15 48 17.45	2.1556	21 22 57.4	9.551
13	14 13 10.18	1.9070	12 27 38.2	12.802	13	15 50 26.97	2.1617	21 32 27.6	9.453
14	14 15 4.73	1.9112	12 40 25.0	12.758	14	15 52 36.85	2.1677	21 41 51.8	9.354
15	14 16 59.53	1.9154	12 53 9.2	12.714	15	15 54 47.10	2.1738	21 51 10.1	9.254
16	14 18 54.58	1.9198	13 5 50.7	12.668	16	15 56 57.71	2.1798	22 0 22.3	9.153
17	14 20 49.90	1.9242	13 18 29.4	12.622	17	15 59 8.68	2.1859	22 9 28.4	9.050
18	14 22 45.48	1.9286	13 31 5.3	12.574	18	16 1 20.02	2.1920	22 18 28.3	8.946
19	14 24 41.33	1.9331	13 43 38.3	12.526	19	16 3 31.72	2.1981	22 27 21.9	8.841
20	14 26 37.45	1.9376	13 56 8.4	12.476	20	16 5 43.79	2.2042	22 36 9.2	8.735
21	14 28 33.85	1.9422	14 8 35.5	12.425	21	16 7 56.22	2.2103	22 44 50.1	8.627
22	14 30 30.52	1.9469	14 20 59.4	12.373	22	16 10 9.02	2.2164	22 53 24.4	8.518
23	14 32 27.47	1.9516	S. 14 33 20.2	12.320	23	16 12 22.18	2.2224	S. 23 1 52.1	8.407
	WEDNESDAY 22.					**FRIDAY 24.**			
0	14 34 24.71	1.9564	S. 14 45 37.8	12.266	0	16 14 35.71	2.2285	S. 23 10 13.2	8.295
1	14 36 22.24	1.9612	14 57 52.1	12.211	1	16 16 49.60	2.2345	23 18 27.6	8.183
2	14 38 20.05	1.9661	15 10 3.1	12.155	2	16 19 3.85	2.2405	23 26 35.1	8.069
3	14 40 18.16	1.9710	15 22 10.7	12.098	3	16 21 18.46	2.2465	23 34 35.8	7.954
4	14 42 16.57	1.9760	15 34 14.8	12.039	4	16 23 33.43	2.2525	23 42 29.6	7.838
5	14 44 15.28	1.9810	15 46 15.3	11.979	5	16 25 48.76	2.2585	23 50 16.4	7.720
6	14 46 14.29	1.9861	15 58 12.3	11.918	6	16 28 4.45	2.2644	23 57 56.0	7.601
7	14 48 13.61	1.9912	16 10 5.6	11.857	7	16 30 20.49	2.2703	24 5 28.5	7.482
8	14 50 13.23	1.9963	16 21 55.1	11.794	8	16 32 36.89	2.2763	24 12 53.8	7.361
9	14 52 13.16	2.0015	16 33 40.8	11.730	9	16 34 53.64	2.2822	24 20 11.8	7.238
10	14 54 13.41	2.0067	16 45 22.7	11.665	10	16 37 10.75	2.2880	24 27 22.3	7.114
11	14 56 13.97	2.0120	16 57 0.6	11.598	11	16 39 28.21	2.2938	24 34 25.4	6.989
12	14 58 14.85	2.0174	17 8 34.5	11.530	12	16 41 46.01	2.2996	24 41 21.0	6.863
13	15 0 16.05	2.0228	17 20 4.3	11.462	13	16 44 4.16	2.3054	24 48 9.0	6.736
14	15 2 17.58	2.0282	17 31 30.0	11.392	14	16 46 22.66	2.3111	24 54 49.3	6.608
15	15 4 19.44	2.0337	17 42 51.4	11.321	15	16 48 41.50	2.3168	25 1 21.9	6.478
16	15 6 21.62	2.0392	17 54 8.5	11.249	16	16 51 0.67	2.3224	25 7 46.7	6.347
17	15 8 24.13	2.0447	18 5 21.2	11.175	17	16 53 20.18	2.3280	25 14 3.6	6.216
18	15 10 26.98	2.0503	18 16 29.5	11.100	18	16 55 40.03	2.3335	25 20 12.6	6.083
19	15 12 30.17	2.0559	18 27 33.3	11.025	19	16 58 0.21	2.3390	25 26 13.6	5.948
20	15 14 33.69	2.0615	18 38 32.5	10.948	20	17 0 20.71	2.3444	25 32 6.4	5.813
21	15 16 37.55	2.0672	18 49 27.1	10.870	21	17 2 41.54	2.3498	25 37 51.1	5.677
22	15 18 41.75	2.0729	19 0 16.9	10.790	22	17 5 2.69	2.3552	25 43 27.6	5.540
23	15 20 46.30	2.0787	19 11 1.9	10.709	23	17 7 24.16	2.3605	25 48 55.8	5.401
24	15 22 51.19	2.0845	S. 19 21 42.0	10.627	24	17 9 45.95	2.3657	S. 25 54 15.7	5.261

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 25.					MONDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 9 45.95	2.3657	S.25 54 15.7	5.261	0	19 7 41.81	2.5081	S.27 9 25.3	2.366
1	17 12 8.05	2.3708	25 59 27.2	5.121	1	19 10 12.31	2.5084	27 6 58.3	2.535
2	17 14 30.45	2.3759	26 4 30.2	4.979	2	19 12 42.82	2.5085	27 4 21.1	2.704
3	17 16 53.16	2.3809	26 9 24.6	4.836	3	19 15 13.33	2.5085	27 1 33.8	2.873
4	17 19 16.16	2.3858	26 14 10.5	4.692	4	19 17 43.84	2.5084	26 58 36.3	3.043
5	17 21 39.46	2.3907	26 18 47.7	4.547	5	19 20 14.34	2.5082	26 55 28.7	3.212
6	17 24 3.04	2.3955	26 23 16.1	4.401	6	19 22 44.83	2.5079	26 52 10.9	3.380
7	17 26 26.91	2.4002	26 27 35.8	4.254	7	19 25 15.30	2.5075	26 48 43.0	3.548
8	17 28 51.06	2.4048	26 31 46.6	4.106	8	19 27 45.73	2.5069	26 45 5.1	3.717
9	17 31 15.49	2.4094	26 35 48.5	3.958	9	19 30 16.12	2.5062	26 41 17.0	3.886
10	17 33 40.19	2.4139	26 39 41.5	3.808	10	19 32 46.47	2.5054	26 37 18.8	4.054
11	17 36 5.16	2.4183	26 43 25.5	3.658	11	19 35 16.77	2.5045	26 33 10.5	4.222
12	17 38 30.39	2.4226	26 47 0.5	3.506	12	19 37 47.01	2.5035	26 28 52.2	4.390
13	17 40 55.88	2.4268	26 50 26.4	3.354	13	19 40 17.19	2.5024	26 24 23.8	4.557
14	17 43 21.61	2.4310	26 53 43.0	3.201	14	19 42 47.30	2.5012	26 19 45.4	4.724
15	17 45 47.59	2.4351	26 56 50.4	3.047	15	19 45 17.33	2.4998	26 14 57.0	4.890
16	17 48 13.82	2.4390	26 59 48.6	2.892	16	19 47 47.28	2.4984	26 9 58.6	5.056
17	17 50 40.28	2.4428	27 2 37.4	2.736	17	19 50 17.14	2.4969	26 4 50.3	5.222
18	17 53 6.96	2.4465	27 5 16.9	2.579	18	19 52 46.91	2.4953	25 59 32.0	5.387
19	17 55 33.87	2.4502	27 7 47.0	2.422	19	19 55 16.58	2.4936	25 54 3.8	5.552
20	17 58 0.99	2.4537	27 10 7.6	2.264	20	19 57 46.14	2.4917	25 48 25.7	5.717
21	18 0 28.32	2.4572	27 12 18.7	2.106	21	20 0 15.59	2.4898	25 42 37.7	5.881
22	18 2 55.86	2.4606	27 14 20.3	1.947	22	20 2 44.92	2.4878	25 36 40.0	6.044
23	18 5 23.60	2.4639	S.27 16 12.3	1.787	23	20 5 14.13	2.4857	S.25 30 32.5	6.207
	SUNDAY 26.					TUESDAY 28.			
0	18 7 51.53	2.4671	S.27 17 54.7	1.626	0	20 7 43.21	2.4835	S.25 24 15.2	6.369
1	18 10 19.64	2.4701	27 19 27.4	1.464	1	20 10 12.16	2.4813	25 17 48.2	6.531
2	18 12 47.94	2.4730	27 20 50.4	1.302	2	20 12 40.97	2.4789	25 11 11.5	6.692
3	18 15 16.41	2.4758	27 22 3.7	1.140	3	20 15 9.63	2.4765	25 4 25.2	6.853
4	18 17 45.04	2.4785	27 23 7.2	0.977	4	20 17 38.15	2.4740	24 57 29.2	7.013
5	18 20 13.83	2.4811	27 24 0.9	0.813	5	20 20 6.51	2.4714	24 50 23.6	7.172
6	18 22 42.77	2.4836	27 24 44.7	0.649	6	20 22 34.72	2.4688	24 43 8.6	7.330
7	18 25 11.86	2.4860	27 25 18.7	0.484	7	20 25 2.77	2.4661	24 35 44.1	7.487
8	18 27 41.09	2.4682	27 25 42.8	0.319	8	20 27 30.65	2.4633	24 28 10.2	7.644
9	18 30 10.45	2.4903	27 25 57.0	−0.153	9	20 29 58.36	2.4604	24 20 26.9	7.800
10	18 32 39.93	2.4923	27 26 1.2	+0.012	10	20 32 25.90	2.4574	24 12 34.2	7.955
11	18 35 9.53	2.4943	27 25 55.5	0.178	11	20 34 53.26	2.4544	24 4 32.3	8.109
12	18 37 39.24	2.4961	27 25 39.8	0.345	12	20 37 20.43	2.4514	23 56 21.1	8.263
13	18 40 9.06	2.4978	27 25 14.1	0.512	13	20 39 47.42	2.4483	23 48 0.7	8.416
14	18 42 38.97	2.4993	27 24 38.3	0.679	14	20 42 14.22	2.4451	23 39 31.2	8.568
15	18 45 8.97	2.5007	27 23 52.5	0.847	15	20 44 40.83	2.4419	23 30 52.6	8.718
16	18 47 39.05	2.5020	27 22 56.6	1.015	16	20 47 7.25	2.4386	23 22 5.0	8.868
17	18 50 9.21	2.5032	27 21 50.6	1.184	17	20 49 33.47	2.4353	23 13 8.5	9.017
18	18 52 39.43	2.5043	27 20 34.5	1.352	18	20 51 59.49	2.4319	23 4 3.0	9.165
19	18 55 9.72	2.5053	27 19 8.3	1.521	19	20 54 25.30	2.4285	22 54 48.6	9.312
20	18 57 40.06	2.5061	27 17 32.0	1.690	20	20 56 50.91	2.4250	22 45 25.5	9.458
21	19 0 10.45	2.5068	27 15 45.5	1.859	21	20 59 16.31	2.4215	22 35 53.6	9.603
22	19 2 40.87	2.5074	27 13 48.9	2.028	22	21 1 41.49	2.4180	22 26 13.1	9.747
23	19 5 11.33	2.5078	27 11 42.2	2.197	23	21 4 6.46	2.4144	22 16 24.0	9.890
24	19 7 41.81	2.5081	S.27 9 25.3	2.366	24	21 6 31.22	2.4108	S.22 6 26.3	10.032

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 6 31.22	2.4108	S. 22 6 26.3	10.032
1	21 8 55.76	2.4072	21 56 20.1	10.173
2	21 11 20.08	2.4035	21 46 5.5	10.313
3	21 13 44.18	2.3998	21 35 42.5	10.452
4	21 16 8.05	2.3961	21 25 11.3	10.589
5	21 18 31.70	2.3923	21 14 31.9	10.725
6	21 20 55.13	2.3886	21 3 44.3	10.860
7	21 23 18.33	2.3848	20 52 48.6	10.994
8	21 25 41.31	2.3811	20 41 45.0	11.126
9	21 28 4.06	2.3773	20 30 33.4	11.258
10	21 30 26.58	2.3735	20 19 14.0	11.388
11	21 32 48.87	2.3697	20 7 46.8	11.518
12	21 35 10.94	2.3659	19 56 11.8	11.646
13	21 37 32.78	2.3620	19 44 29.2	11.773
14	21 39 54.38	2.3581	19 32 39.1	11.898
15	21 42 15.75	2.3543	19 20 41.5	12.022
16	21 44 36.90	2.3505	19 8 36.5	12.145
17	21 46 57.82	2.3467	18 56 24.1	12.267
18	21 49 18.51	2.3429	18 44 4.5	12.387
19	21 51 38.97	2.3392	18 31 37.7	12.506
20	21 53 59.21	2.3354	18 19 3.8	12.623
21	21 56 19.22	2.3317	18 6 22.9	12.739
22	21 58 39.01	2.3279	17 53 35.1	12.854
23	22 0 58.57	2.3242	S. 17 40 40.4	12.968

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 3 17.91	2.3205	S. 17 27 39.0	13.080
1	22 5 37.03	2.3168	17 14 30.9	13.191
2	22 7 55.92	2.3131	17 1 16.1	13.300
3	22 10 14.60	2.3095	16 47 54.8	13.408
4	22 12 33.06	2.3059	16 34 27.1	13.514
5	22 14 51.31	2.3023	16 20 53.1	13.619
6	22 17 9.34	2.2987	16 7 12.8	13.723
7	22 19 27.16	2.2952	15 53 26.3	13.825
8	22 21 44.77	2.2917	15 39 33.8	13.926
9	22 24 2.17	2.2883	15 25 35.3	14.025
10	22 26 19.37	2.2849	15 11 30.8	14.123
11	22 28 36.36	2.2816	14 57 20.5	14.219
12	22 30 53.16	2.2783	14 43 4.5	14.314
13	22 33 9.76	2.2750	14 28 42.8	14.407
14	22 35 26.16	2.2717	14 14 15.6	14.499
15	22 37 42.37	2.2685	13 59 42.9	14.589
16	22 39 58.38	2.2653	13 45 4.9	14.678
17	22 42 14.21	2.2622	13 30 21.6	14.765
18	22 44 29.85	2.2592	13 15 33.1	14.851
19	22 46 45.31	2.2562	13 0 39.5	14.935
20	22 49 0.60	2.2532	12 45 40.9	15.018
21	22 51 15.71	2.2503	12 30 37.4	15.099
22	22 53 30.64	2.2475	12 15 29.0	15.179
23	22 55 45.40	2.2447	12 0 15.9	15.257
24	22 58 0.01	2.2420	S. 11 44 58.2	15.333

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 58 0.01	2.2420	S. 11 44 58.2	15.333
1	23 0 14.46	2.2394	11 29 36.0	15.408
2	23 2 28.74	2.2368	11 14 9.3	15.481
3	23 4 42.86	2.2342	10 58 38.4	15.553
4	23 6 56.84	2.2317	10 43 3.0	15.623
5	23 9 10.67	2.2293	10 27 23.6	15.691
6	23 11 24.35	2.2269	10 11 40.1	15.758
7	23 13 37.89	2.2246	9 55 52.6	15.823
8	23 15 51.30	2.2224	9 40 1.3	15.886
9	23 18 4.58	2.2202	9 24 6.2	15.948
10	23 20 17.72	2.2181	9 8 7.5	16.008
11	23 22 30.74	2.2160	8 52 5.2	16.067
12	23 24 43.64	2.2140	8 35 59.4	16.124
13	23 26 56.42	2.2121	8 19 50.2	16.180
14	23 29 9.09	2.2103	8 3 37.8	16.234
15	23 31 21.65	2.2085	7 47 22.2	16.286
16	23 33 34.11	2.2068	7 31 3.5	16.336
17	23 35 46.47	2.2052	7 14 41.8	16.385
18	23 37 58.73	2.2036	6 58 17.3	16.432
19	23 40 10.90	2.2021	6 41 50.0	16.477
20	23 42 22.98	2.2007	6 25 20.1	16.521
21	23 44 34.98	2.1993	6 8 47.6	16.563
22	23 46 46.90	2.1981	5 52 12.6	16.603
23	23 48 58.75	2.1969	S. 5 35 35.3	16.641

SATURDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 51 10.53	2.1958	S. 5 18 55.7	16.678

PHASES OF THE MOON.

	d	h	m
☉ Full Moon, . . .	5	17	31.6
☾ Last Quarter, . .	12	18	25.6
● New Moon, . .	20	22	55.2
☽ First Quarter, . .	28	12	10.0

	d	h
☾ Perigee, ...	4	18.8
☾ Apogee, ...	17	4.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III^h.	P. L. of Diff.	VI^h.	P. L. of Diff.	IX^h.	P. L. of Diff.
1	Sun	W.	114° 2′ 43″	2593	115° 41′ 47″	2577	117° 21′ 13″	2561	119° 1′ 1″	2545
	Antares	W.	54 18 52	2281	56 5 19	2265	57 52 10	2250	59 39 23	2235
	Mars	W.	41 14 37	2494	42 55 59	2477	44 37 45	2461	46 19 53	2446
	α Pegasi	E.	54 14 16	2893	52 41 48	2907	51 9 38	2925	49 37 51	2948
	α Arietis	E.	94 11 47	2353	92 27 4	2337	90 41 58	2322	88 56 30	2307
2	Antares	W.	68 40 57	2164	70 30 19	2150	72 20 2	2137	74 10 5	2125
	Mars	W.	54 55 56	2371	56 40 12	2358	58 24 47	2344	60 9 42	2332
	Saturn	W.	21 22 7	2254	23 9 14	2228	24 57 0	2205	26 45 20	2184
	α Arietis	E.	80 3 57	2239	78 16 27	2227	76 28 40	2215	74 40 35	2204
	Aldebaran	E.	110 20 56	2200	108 32 28	2186	106 43 39	2172	104 54 30	2159
3	Antares	W.	83 24 48	2070	85 16 34	2061	87 8 34	2052	89 0 48	2043
	Mars	W.	68 58 43	2274	70 45 20	2264	72 32 12	2255	74 19 18	2247
	α Aquilæ	W.	45 53 14	4078	47 3 37	3946	48 16 10	3827	49 30 44	3721
	Saturn	W.	35 54 0	2104	37 44 53	2092	39 36 5	2081	41 27 34	2070
	α Arietis	E.	65 36 25	2161	63 46 58	2154	61 57 21	2149	60 7 36	2144
	Aldebaran	E.	95 44 4	2103	93 53 9	2093	92 1 59	2084	90 10 35	2075
4	Antares	W.	98 24 52	2012	100 18 8	2007	102 11 31	2004	104 4 59	2001
	Mars	W.	83 17 36	2214	85 5 43	2210	86 53 56	2206	88 42 15	2203
	α Aquilæ	W.	56 8 54	3318	57 32 45	3259	58 57 44	3206	60 23 46	3158
	Saturn	W.	50 48 35	2031	52 41 21	2026	54 34 15	2021	56 27 16	2017
	α Arietis	E.	50 57 46	2140	49 7 48	2143	47 17 55	2149	45 28 10	2157
	Aldebaran	E.	80 50 46	2045	78 58 22	2042	77 5 53	2039	75 13 19	2036
5	Mars	W.	97 44 31	2200	99 32 58	2202	101 21 23	2204	103 9 44	2208
	α Aquilæ	W.	67 46 30	2985	69 17 1	2964	70 47 59	2944	72 19 22	2926
	Saturn	W.	65 53 21	2012	67 46 37	2013	69 39 51	2015	71 33 2	2018
	Fomalhaut	W.	33 57 1	2583	35 36 20	2533	37 16 48	2489	38 58 16	2454
	Aldebaran	E.	65 50 4	2039	63 57 30	2042	62 5 1	2046	60 12 38	2050
	Pollux	E.	109 44 58	1996	107 51 18	1998	105 57 40	2000	104 4 5	2003
6	Saturn	W.	80 57 23	2044	82 49 48	2052	84 42 1	2061	86 34 1	2069
	α Aquilæ	W.	80 0 27	2885	81 33 5	2885	83 5 43	2887	84 38 19	2890
	Fomalhaut	W.	47 35 42	2350	49 20 29	2340	51 5 30	2333	52 50 42	2327
	Aldebaran	E.	50 53 11	2092	49 2 0	2103	47 11 6	2116	45 20 31	2130
	Pollux	E.	94 37 52	2030	92 45 5	2038	90 52 30	2046	89 0 8	2055
7	Saturn	W.	95 50 12	2125	97 40 33	2138	99 30 34	2151	101 20 15	2166
	α Aquilæ	W.	92 19 12	2942	93 50 38	2958	95 21 43	2977	96 52 25	2996
	Fomalhaut	W.	61 37 33	2332	63 22 46	2338	65 7 50	2345	66 52 44	2352
	α Pegasi	W.	44 32 32	2934	46 4 8	2897	47 36 31	2866	49 9 34	2839
	Aldebaran	E.	36 13 26	2219	34 25 27	2245	32 38 6	2272	30 51 25	2301
	Pollux	E.	79 42 5	2111	77 51 22	2123	76 0 58	2136	74 10 54	2151
	Regulus	E.	116 5 15	2124	114 14 53	2137	112 24 51	2151	110 35 9	2164
8	Fomalhaut	W.	75 33 50	2410	77 17 11	2424	79 0 12	2438	80 42 52	2453
	α Pegasi	W.	57 1 14	2773	58 36 17	2769	60 11 25	2768	61 46 35	2768
	Pollux	E.	65 6 8	2228	63 18 22	2244	61 31 0	2261	59 44 3	2279
	Regulus	E.	101 31 59	2239	99 44 30	2256	97 57 25	2272	96 10 45	2290
	Venus	E.	115 57 57	2618	114 19 26	2635	112 41 19	2654	111 3 37	2672
9	Fomalhaut	W.	89 10 30	2540	90 50 48	2559	92 30 40	2577	94 10 6	2598
	α Pegasi	W.	69 41 27	2798	71 15 58	2807	72 50 17	2818	74 24 22	2830

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	120° 41′ 12″	2529	122° 21′ 45″	2515	124° 2′ 38″	2499	125° 43′ 52″	2485
	Antares	W.	61 26 58	2220	63 14 55	2205	65 3 15	2191	66 51 56	2178
	Mars	W.	48 2 22	2431	49 45 13	2415	51 28 26	2401	53 12 0	2385
	α Pegasi	E.	48 6 33	2975	46 35 49	3007	45 5 45	3046	43 36 29	3093
	α Arietis	E.	87 10 41	2292	85 24 30	2279	83 37 59	2265	81 51 8	2251
2	Antares	W.	76 0 26	2113	77 51 6	2101	79 42 3	2090	81 33 17	2079
	Mars	W.	61 54 55	2320	63 40 26	2307	65 26 15	2296	67 12 21	2285
	Saturn	W.	28 34 12	2165	30 23 32	2148	32 13 18	2132	34 3 28	2118
	α Arietis	E.	72 52 14	2194	71 3 37	2184	69 14 46	2176	67 25 42	2167
	Aldebaran	E.	103 5 1	2147	101 15 13	2135	99 25 7	2124	97 34 44	2113
3	Antares	W.	90 53 15	2035	92 45 54	2028	94 38 44	2022	96 31 44	2017
	Mars	W.	76 6 36	2239	77 54 6	2231	79 41 47	2225	81 29 37	2220
	α Aquilæ	W.	50 47 9	3623	52 5 18	3535	53 25 4	3455	54 46 18	3383
	Saturn	W.	43 19 19	2061	45 11 19	2052	47 3 33	2044	48 55 59	2037
	α Arietis	E.	58 17 44	2141	56 27 47	2139	54 37 48	2138	52 47 47	2138
	Aldebaran	E.	88 18 58	2068	86 27 10	2061	84 35 11	2055	82 43 3	2050
4	Antares	W.	105 58 32	1999	107 52 8	1998	109 45 46	1997	111 39 25	1996
	Mars	W.	90 30 38	2201	92 19 4	2199	94 7 33	2190	95 56 2	2199
	α Aquilæ	W.	61 50 45	3115	63 18 36	3078	64 47 13	3043	66 16 32	3012
	Saturn	W.	58 20 23	2015	60 13 34	2013	62 6 48	2012	64 0 4	2011
	α Arietis	E.	43 38 36	2167	41 49 18	2178	40 0 17	2192	38 11 37	2210
	Aldebaran	E.	73 20 41	2035	71 28 1	2035	69 35 21	2035	67 42 42	2036
5	Mars	W.	104 57 59	2219	106 46 8	2217	108 34 10	2223	110 22 3	2230
	α Aquilæ	W.	73 51 8	2912	75 23 11	2902	76 55 27	2894	78 27 53	2886
	Saturn	W.	73 26 8	2021	75 19 9	2026	77 12 2	2032	79 4 47	2037
	Fomalhaut	W.	40 40 34	2424	42 23 35	2400	44 7 10	2380	45 51 14	2363
	Aldebaran	E.	58 20 22	2057	56 28 16	2064	54 36 21	2072	52 44 39	2081
	Pollux	E.	102 10 36	2007	100 17 13	2012	98 23 57	2017	96 30 50	2023
6	Saturn	W.	88 25 48	2079	90 17 19	2090	92 8 34	2101	93 59 32	2113
	α Aquilæ	W.	86 10 51	2896	87 43 15	2905	89 15 28	2915	90 47 28	2927
	Fomalhaut	W.	54 36 2	2324	56 21 26	2324	58 6 51	2325	59 52 14	2326
	Aldebaran	E.	43 30 17	2144	41 40 25	2161	39 50 58	2178	38 1 58	2197
	Pollux	E.	87 7 59	2064	85 16 5	2075	83 24 28	2086	81 33 8	2098
7	Saturn	W.	103 9 34	2180	104 58 31	2196	106 47 5	2211	108 35 16	2226
	α Aquilæ	W.	98 22 40	3021	99 52 27	3044	101 21 45	3070	102 50 31	3101
	Fomalhaut	W.	68 37 28	2362	70 21 58	2373	72 6 12	2384	73 50 10	2396
	α Pegasi	W.	50 43 11	2818	52 17 15	2803	53 51 39	2790	55 26 20	2780
	Aldebaran	E.	29 5 27	2335	27 20 18	2372	25 36 3	2413	23 52 47	2458
	Pollux	E.	72 21 12	2165	70 31 52	2180	68 42 54	2195	66 54 19	2211
	Regulus	E.	108 45 47	2178	106 56 46	2193	105 8 8	2208	103 19 52	2223
8	Fomalhaut	W.	82 25 11	2470	84 7 7	2487	85 48 39	2504	87 29 47	2522
	α Pegasi	W.	63 21 45	2771	64 56 51	2775	66 31 51	2781	68 6 44	2788
	Pollux	E.	57 57 33	2297	56 11 29	2315	54 25 51	2333	52 40 39	2351
	Regulus	E.	94 24 31	2307	92 38 42	2325	90 53 19	2344	89 8 23	2362
	Venus	E.	109 26 20	2692	107 49 29	2710	106 13 3	2731	104 37 4	2750
9	Fomalhaut	W.	95 49 4	2618	97 27 35	2638	99 5 30	2658	100 43 15	2680
	α Pegasi	W.	75 58 11	2843	77 31 43	2856	79 4 58	2871	80 37 54	2887

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	α Arietis	W.	26° 3′ 34″	2773	27° 38′ 37″	2747	29° 14′ 14″	2729	30° 50′ 15″	2717
	Pollux	E.	50 55 54	2370	49 11 36	2389	47 27 45	2408	45 44 21	2427
	Regulus	E.	87 23 53	2380	85 39 50	2399	83 56 14	2418	82 13 5	2436
	Venus	E.	103 1 31	2770	101 26 24	2791	99 51 44	2811	98 17 31	2831
	Jupiter	E.	108 48 34	2438	107 5 54	2457	105 23 40	2476	103 41 53	2494
10	α Pegasi	W.	82 10 30	2902	83 42 46	2919	85 14 41	2935	86 46 15	2953
	α Arietis	W.	38 52 36	2711	40 29 1	2717	42 5 18	2725	43 41 25	2734
	Pollux	E.	37 14 12	2524	35 33 32	2543	33 53 19	2563	32 13 33	2582
	Regulus	E.	73 44 2	2533	72 3 34	2552	70 23 33	2571	68 43 58	2591
	Venus	E.	90 33 4	2935	89 1 30	2956	87 30 22	2977	85 59 40	2997
	Jupiter	E.	95 19 35	2591	93 40 27	2610	92 1 45	2629	90 23 29	2647
	Sun	E.	122 53 6	2855	121 19 49	2875	119 46 58	2894	118 14 32	2915
11	α Pegasi	W.	94 18 24	3047	95 47 39	3067	97 16 29	3087	98 44 55	3107
	α Arietis	W.	51 38 44	2788	53 13 27	2801	54 47 53	2814	56 22 3	2827
	Aldebaran	W.	21 29 19	2941	23 0 46	2924	24 32 34	2912	26 4 37	2906
	Regulus	E.	60 32 32	2684	58 55 30	2702	57 18 53	2720	55 42 40	2738
	Venus	E.	78 32 31	3098	77 4 19	3117	75 36 30	3137	74 9 5	3155
	Jupiter	E.	82 18 27	2740	80 42 40	2758	79 7 17	2775	77 32 17	3793
	Sun	E.	110 38 40	3013	109 8 43	3031	107 39 9	3050	106 9 58	3069
12	α Arietis	W.	64 8 40	2893	65 41 9	2906	67 13 22	2917	68 45 19	2930
	Aldebaran	W.	33 45 36	2915	35 17 36	2922	36 49 27	2929	38 21 9	2936
	Regulus	E.	47 47 22	2824	46 13 25	2841	44 39 50	2858	43 6 37	2873
	Venus	E.	66 57 31	3245	65 32 15	3262	64 7 19	3279	62 42 43	3294
	Jupiter	E.	69 42 50	2876	68 10 0	2891	66 37 30	2906	65 5 19	2921
	Sun	E.	98 49 35	3156	97 22 33	3173	95 55 51	3188	94 29 28	3204
13	α Arietis	W.	76 21 10	2989	77 51 36	3001	79 21 48	3011	80 51 47	3022
	Aldebaran	W.	45 57 8	2979	47 27 47	2987	48 58 16	2996	50 28 34	3004
	Regulus	E.	35 25 36	2953	33 54 24	2968	32 23 31	2984	30 52 58	3001
	Venus	E.	55 44 12	3369	54 21 20	3383	52 58 44	3395	51 36 22	3406
	Jupiter	E.	57 28 57	2989	55 58 31	3002	54 28 21	3014	52 58 26	3026
	Sun	E.	87 21 59	3276	85 57 19	3288	84 32 54	3301	83 8 44	3313
14	α Arietis	W.	88 18 35	3069	89 47 22	3078	91 15 59	3086	92 44 26	3093
	Aldebaran	W.	57 57 33	3043	59 26 53	3051	60 56 3	3056	62 25 6	3063
	Venus	E.	44 48 0	3464	43 26 56	3475	42 6 4	3484	40 45 22	3494
	Jupiter	E.	45 32 17	3078	44 3 41	3088	42 35 17	3096	41 7 3	3105
	Sun	F.	76 11 13	3367	74 48 19	3376	73 25 35	3385	72 3 1	3393
15	α Arietis	W.	100 4 27	3128	101 32 3	3133	102 59 32	3139	104 26 54	3144
	Aldebaran	W.	69 48 32	3089	71 16 55	3094	72 45 12	3098	74 13 24	3101
	Pollux	W.	25 32 24	3060	27 1 23	3063	28 30 18	3067	29 59 8	3071
	Jupiter	E.	33 48 24	3143	32 21 7	3151	30 53 59	3158	29 26 59	3164
	Sun	E.	65 12 24	3428	63 50 39	3433	62 29 0	3438	61 7 27	3442
16	Aldebaran	W.	81 33 28	3114	83 1 21	3115	84 29 12	3116	85 57 2	3118
	Pollux	W.	37 22 24	3082	38 50 55	3083	40 19 25	3085	41 47 53	3085
	Sun	E.	54 20 47	3459	52 59 37	3462	51 38 30	3463	50 17 25	3463
17	Aldebaran	W.	93 16 0	3118	94 43 48	3117	96 11 37	3115	97 39 28	3114
	Pollux	W.	49 10 10	3084	50 38 39	3082	52 7 10	3081	53 35 43	3079
	Sun	E.	43 32 7	3464	42 11 3	3463	40 49 58	3463	39 28 52	3460

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P L. of Diff.
9	α Arietis	W.	32° 26′ 32″	2710	34° 2′ 59″	2705	35° 39′ 32″	2704	37° 16′ 6″	2707
	Pollux	E.	44 1 25	2446	42 18 56	2465	40 36 54	2485	38 55 19	2504
	Regulus	E.	80 30 22	2455	78 48 6	2475	77 6 18	2494	75 24 57	2513
	Venus	E.	96 43 44	2859	95 10 24	2873	93 37 31	2894	92 5 4	2915
	Jupiter	E.	102 0 32	2514	100 19 38	2533	98 39 11	2552	96 59 10	2571
10	α Pegasi	W.	88 17 27	2971	89 48 16	2989	91 18 42	3008	92 48 45	3027
	α Arietis	W.	45 17 20	2744	46 53 2	2753	48 28 31	2765	50 3 45	2776
	Pollux	E.	30 34 13	2601	28 55 20	2621	27 16 53	2640	25 38 53	2660
	Regulus	E.	67 4 50	2609	65 26 7	2628	63 47 50	2646	62 9 58	2666
	Venus	E.	84 29 24	3018	82 59 34	3038	81 30 8	3058	80 1 7	3078
	Jupiter	E.	88 45 38	2666	87 8 13	2685	85 31 13	2704	83 54 38	2722
	Sun	E.	116 42 32	2935	115 10 57	2954	113 39 47	2973	112 9 1	2993
11	α Pegasi	W.	100 12 56	3122	101 40 32	3149	103 7 42	3170	104 34 27	3192
	α Arietis	W.	57 55 56	2840	59 29 32	2852	61 2 52	2866	62 35 55	2880
	Aldebaran	W.	27 36 48	2903	29 9 3	2903	30 41 18	2906	32 13 30	2910
	Regulus	E.	54 6 50	2756	52 31 24	2773	50 56 21	2791	49 21 41	2807
	Venus	E.	72 42 2	3174	71 15 22	3193	69 49 4	3210	68 23 7	3228
	Jupiter	E.	75 57 40	2810	74 23 25	2827	72 49 32	2844	71 16 1	2859
	Sun	E.	104 41 10	3087	103 12 44	3105	101 44 40	3122	100 16 57	3139
12	α Arietis	W.	70 17 0	2942	71 48 25	2954	73 19 35	2966	74 50 30	2978
	Aldebaran	W.	39 52 42	2944	41 24 5	2953	42 55 17	2962	44 26 18	2970
	Regulus	E.	41 33 44	2890	40 1 12	2905	38 29 0	2922	36 57 8	2937
	Venus	E.	61 18 25	3311	59 54 26	3325	58 30 44	3341	57 7 20	3355
	Jupiter	E.	63 33 27	2936	62 1 54	2950	60 30 38	2963	58 59 39	2977
	Sun	E.	93 3 23	3919	91 37 36	3934	90 12 7	3948	88 46 55	3962
13	α Arietis	W.	82 21 33	3131	83 51 7	3042	85 20 28	3052	86 49 37	3060
	Aldebaran	W.	51 58 42	3012	53 28 40	3021	54 58 27	3029	56 28 4	3035
	Regulus	E.	29 22 46	3017	27 52 54	3034	26 23 23	3051	25 4 13	3069
	Venus	E.	50 14 15	3421	48 52 22	3432	47 30 42	3444	46 9 15	3454
	Jupiter	E.	51 28 45	3037	49 59 18	3048	48 30 5	3059	47 1 5	3069
	Sun	E.	81 44 48	3325	80 21 5	3337	78 57 36	3347	77 34 19	3357
14	α Arietis	W.	94 12 44	3101	95 40 52	3108	97 8 52	3115	98 36 43	3121
	Aldebaran	W.	63 54 1	3069	65 22 49	3074	66 51 30	3080	68 20 4	3085
	Venus	E.	39 24 51	3502	38 4 29	3510	36 44 16	3518	35 24 12	3525
	Jupiter	E.	39 39 0	3114	38 11 7	3121	36 43 23	3129	35 15 49	3137
	Sun	E.	70 40 37	3401	69 18 22	3408	67 56 15	3415	66 34 16	3422
15	α Arietis	W.	105 54 10	3149	107 21 20	3153	108 48 25	3158	110 15 24	3163
	Aldebaran	W.	75 41 32	3105	77 9 36	3108	78 37 36	3110	80 5 33	3112
	Pollux	W.	31 27 53	3073	32 56 35	3076	34 25 14	3078	35 53 50	3080
	Jupiter	E.	28 0 7	3171	26 33 23	3178	25 6 48	3185	23 40 21	3192
	Sun	E.	59 45 58	3446	58 24 34	3451	57 3 15	3454	55 42 0	3456
16	Aldebaran	W.	87 24 50	3118	88 52 38	3119	90 20 25	3119	91 48 12	3118
	Pollux	W.	43 16 21	3086	44 44 48	3086	46 13 15	3086	47 41 43	3085
	Sun	E.	48 56 20	3464	47 35 16	3465	46 14 13	3465	44 53 10	3465
17	Aldebaran	W.	99 7 20	3113	100 35 14	3110	102 3 12	3106	103 31 12	3105
	Pollux	W.	55 4 18	3077	56 32 56	3075	58 1 36	3073	59 30 19	3069
	Sun	E.	38 7 43	3458	36 46 32	3456	35 25 19	3454	34 4 3	3452

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Pollux	W.	60° 59′ 6″	3066	62° 27′ 57″	3063	63° 56′ 52″	3059	65° 25′ 52″	3056
	Sun	E.	32 42 45	3448	31 21 23	3446	29 59 58	3442	28 38 29	3438
23	Sun	W.	23 9 23	3182	24 35 54	3172	26 2 37	3163	27 29 31	3153
	Saturn	E.	63 13 17	2845	61 39 48	2838	60 6 10	2831	58 32 22	2823
	α Aquilæ	E.	70 12 33	3795	68 57 26	3808	67 42 32	3822	66 27 53	3840
	Fomalhaut	E.	97 53 43	2991	96 23 19	2981	94 52 43	2972	93 21 55	2964
24	Sun	W.	34 46 52	3105	36 14 55	3096	37 43 9	3087	39 11 35	3077
	Saturn	E.	50 40 57	2786	49 6 11	2779	47 31 16	2772	45 56 11	2765
	α Aquilæ	E.	60 19 49	3962	59 7 32	3995	57 55 47	4031	56 44 38	4072
	Fomalhaut	E.	85 45 21	2924	84 13 32	2916	82 41 33	2909	81 9 25	2901
	α Pegasi	E.	105 32 55	3158	104 5 55	3143	102 38 38	3130	101 11 5	3116
25	Sun	W.	46 36 45	3027	48 6 24	3018	49 36 15	3007	51 6 19	2997
	Saturn	E.	37 58 28	2731	36 22 29	2724	34 46 21	2719	33 10 6	2713
	α Aquilæ	E.	51 0 11	4350	49 54 4	4425	48 49 5	4508	47 45 20	4599
	Fomalhaut	E.	73 26 33	2869	71 53 34	2863	70 20 28	2858	68 47 15	2853
	α Pegasi	E.	93 49 30	3059	92 20 30	3049	90 51 18	3039	89 21 54	3030
26	Sun	W.	58 39 56	2943	60 11 20	2933	61 42 57	2922	63 14 48	2910
	Antares	W.	23 42 10	2625	25 20 31	2612	26 59 9	2600	28 38 4	2588
	Fomalhaut	E.	60 59 44	2835	59 26 1	2832	57 52 15	2831	56 18 27	2830
	α Pegasi	E.	81 52 13	2991	80 21 49	2985	78 51 17	2979	77 20 38	2974
27	Sun	W.	70 57 42	2853	72 31 1	2842	74 4 35	2829	75 38 25	2818
	Antares	W.	36 56 47	2529	38 37 20	2517	40 18 9	2506	41 59 14	2494
	Fomalhaut	E.	48 29 46	2846	46 56 18	2853	45 22 59	2862	43 49 52	2875
	α Pegasi	E.	69 46 6	2960	68 15 3	2959	66 43 59	2960	65 12 56	2962
	α Arietis	E.	111 17 23	2606	109 38 36	2594	107 59 32	2581	106 20 11	2568
28	Sun	W.	83 31 26	2757	85 6 50	2745	86 42 30	2733	88 18 26	2720
	Antares	W.	50 28 46	2436	52 11 29	2424	53 54 29	2412	55 37 46	2401
	α Pegasi	E.	57 38 51	2993	56 8 30	3005	54 38 23	3019	53 8 34	3037
	α Arietis	E.	97 59 8	2507	96 18 5	2496	94 36 46	2484	92 55 10	2473
29	Sun	W.	96 22 13	2659	97 59 48	2647	99 37 39	2635	101 15 46	2624
	Antares	W.	64 18 18	2344	66 3 14	2332	67 48 27	2321	69 33 56	2310
	Mars	W.	31 14 57	2589	32 54 7	2577	34 33 34	2564	36 13 19	2551
	α Arietis	E.	84 23 10	2417	82 39 59	2405	80 56 32	2396	79 12 51	2385
	Aldebaran	E.	114 40 23	2384	112 56 25	2371	111 12 9	2359	109 27 35	2346
30	Sun	W.	109 30 23	2566	111 10 5	2554	112 50 3	2543	114 30 16	2533
	Antares	W.	78 25 24	2255	80 12 30	2245	81 59 50	2235	83 47 25	2225
	Mars	W.	44 36 22	2491	46 17 48	2480	47 59 29	2469	49 41 26	2458
	Saturn	W.	30 14 25	2319	31 59 57	2304	33 45 51	2289	35 32 6	2276
	α Arietis	E.	70 30 54	2339	68 45 51	2331	67 0 37	2323	65 15 11	2316
	Aldebaran	E.	100 40 29	2290	98 54 15	2279	97 7 45	2269	95 21 0	2259
31	Antares	W.	92 48 55	2180	94 37 53	2172	96 27 3	2164	98 16 25	2157
	Mars	W.	58 14 49	2410	59 58 10	2401	61 41 44	2393	63 25 29	2384
	α Aquilæ	W.	52 10 33	3693	53 27 27	3615	54 45 45	3543	56 5 22	3476
	Saturn	W.	44 27 58	2218	46 15 58	2209	48 4 12	2200	49 52 40	2191
	α Arietis	E.	56 25 44	2290	54 39 30	2287	52 53 11	2285	51 6 49	2283
	Aldebaran	E.	86 23 40	2214	84 35 33	2205	82 47 13	2198	80 58 43	2191

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Pollux	W.	66° 54′ 56″	3052	68° 24′ 5″	3047	69° 53′ 20″	3043	71° 22′ 40″	3038
	Sun	E.	27 16 55	3434	25 55 17	3431	24 33 35	3427	23 11 49	3423
23	Sun	W.	28 56 36	3143	30 23 53	3134	31 51 21	3124	33 19 1	3115
	Saturn	E.	56 58 24	2816	55 24 17	2808	53 50 0	2801	52 15 33	2794
	α Aquilæ	E.	65 13 32	3859	63 59 31	3880	62 45 51	3905	61 32 36	3932
	Fomalhaut	E.	91 50 57	2955	90 19 48	2947	88 48 29	2939	87 17 0	2931
24	Sun	W.	40 40 13	3067	42 9 3	3057	43 38 5	3047	45 7 19	3038
	Saturn	E.	44 20 57	2758	42 45 34	2750	41 10 1	2744	39 34 19	2737
	α Aquilæ	E.	55 34 9	4117	54 24 24	4166	53 15 26	4221	52 7 20	4282
	Fomalhaut	E.	79 37 8	2894	78 4 42	2887	76 32 7	2881	74 59 24	2875
	α Pegasi	E.	99 43 15	3104	98 15 10	3092	96 46 51	3080	95 18 17	3069
25	Sun	W.	52 36 36	2986	54 7 6	2976	55 37 49	2965	57 8 46	2954
	Saturn	E.	31 33 44	2709	29 57 16	2704	28 20 42	2701	26 44 4	2698
	α Aquilæ	E.	46 42 54	4701	45 41 55	4814	43 42 30	4940	41 44 47	5081
	Fomalhaut	E.	67 13 56	2848	65 40 30	2844	64 6 59	2840	62 33 23	2838
	α Pegasi	E.	87 52 18	3021	86 22 31	3014	84 52 35	3005	83 22 29	2997
26	Sun	W.	64 46 54	2899	66 19 14	2887	67 51 49	2876	69 24 38	2865
	Antares	W.	30 17 16	2576	31 56 44	2564	33 36 29	2552	35 16 30	2540
	Fomalhaut	E.	54 44 38	2831	53 10 50	2832	51 37 4	2835	50 3 22	2840
	α Pegasi	E.	75 49 53	2969	74 19 2	2966	72 48 7	2963	71 17 8	2961
27	Sun	W.	77 12 30	2805	78 46 51	2794	80 21 27	2782	81 56 19	2770
	Antares	W.	43 40 36	2482	45 22 14	2471	47 4 8	2459	48 46 19	2448
	Fomalhaut	E.	42 17 1	2891	40 44 30	2909	39 12 22	2931	37 40 43	2959
	α Pegasi	E.	63 41 56	2965	62 10 59	2969	60 40 8	2975	59 9 24	2984
	α Arietis	E.	104 40 32	2556	103 0 36	2544	101 20 24	2532	99 39 55	2519
28	Sun	W.	89 54 39	2708	91 31 8	2696	93 7 53	2684	94 44 55	2672
	Antares	W.	57 21 19	2389	59 5 9	2378	60 49 15	2366	62 33 38	2355
	α Pegasi	E.	51 39 7	3057	50 10 5	3079	48 41 30	3106	47 13 28	3141
	α Arietis	E.	91 13 18	2461	89 31 10	2450	87 48 46	2438	86 6 6	2427
29	Sun	W.	102 54 9	2612	104 32 48	2599	106 11 44	2588	107 50 56	2577
	Antares	W.	71 19 41	2299	73 5 42	2287	74 52 0	2277	76 38 34	2266
	Mars	W.	37 53 22	2538	39 33 42	2526	41 14 19	2515	42 55 12	2502
	α Arietis	E.	77 28 55	2375	75 44 45	2366	74 0 21	2357	72 15 44	2348
	Aldebaran	E.	107 42 43	2335	105 57 34	2324	104 12 9	2312	102 26 27	2301
30	Sun	W.	116 10 43	2522	117 51 25	2513	119 32 20	2503	121 13 29	2493
	Antares	W.	85 35 15	2216	87 23 19	2206	89 11 38	2197	91 0 10	2188
	Mars	W.	51 23 38	2448	53 6 5	2438	54 48 46	2428	56 31 41	2419
	Saturn	W.	37 18 41	2263	39 5 35	2251	40 52 46	2240	42 40 14	2229
	α Arietis	E.	63 29 35	2309	61 43 49	2304	59 57 55	2298	58 11 53	2294
	Aldebaran	E.	93 34 0	2249	91 46 46	2239	89 59 17	2231	88 11 35	2222
31	Antares	W.	100 5 58	2149	101 55 42	2143	103 45 35	2137	105 35 38	2131
	Mars	W.	65 9 26	2377	66 53 34	2370	68 37 52	2363	70 22 20	2357
	α Aquilæ	W.	57 26 13	3415	58 48 12	3360	60 11 14	3309	61 35 15	3263
	Saturn	W.	51 41 21	2183	53 30 14	2175	55 19 19	2168	57 8 35	2162
	α Arietis	E.	49 20 27	2285	47 34 6	2286	45 47 46	2289	44 1 31	2295
	Aldebaran	E.	79 10 2	2184	77 21 11	2178	75 32 11	2173	73 43 3	2168

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	14 27 1.83	9.808	S. 14 33 25.2	47.90	16 9.98	66.99	16 17.47	0.047
Sun.	2	14 30 57.61	9.842	14 52 27.8	47.29	16 10.23	67.11	16 18.25	0.014
Mon.	3	14 34 54.19	9.876	15 11 15.9	46.67	16 10.48	67.22	16 18.22	0.020
Tues.	4	14 38 51.58	9.910	15 29 49.0	46.05	16 10.72	67.34	16 17.39	0.054
Wed.	5	14 42 49.81	9.944	15 48 6.9	45.40	16 10.96	67.46	16 15.73	0.088
Thur.	6	14 46 48.87	9.979	16 6 9.0	44.74	16 11.20	67.58	16 13.22	0.123
Frid.	7	14 50 48.77	10.013	16 23 54.9	44.05	16 11.43	67.70	16 9.88	0.157
Sat.	8	14 54 49.53	10.049	16 41 24.3	43.35	16 11.66	67.82	16 5.70	0.193
Sun.	9	14 58 51.15	10.085	16 58 36.9	42.65	16 11.88	67.94	16 0.66	0.229
Mon.	10	15 2 53.63	10.121	17 15 32.4	41.92	16 12.10	68.06	15 54.75	0.265
Tues.	11	15 6 56.97	10.157	17 32 10.0	41.17	16 12.32	68.18	15 47.97	0.301
Wed.	12	15 11 1.18	10.194	17 48 29.5	40.41	16 12.53	68.29	15 40.34	0.337
Thur.	13	15 15 6.28	10.230	18 4 30.7	39.63	16 12.74	68.41	15 31.82	0.373
Frid.	14	15 19 12.24	10.266	18 20 13.2	38.85	16 12.95	68.53	15 22.43	0.409
Sat.	15	15 23 19.06	10.302	18 35 36.3	38.03	16 13.16	68.65	15 12.20	0.445
Sun.	16	15 27 26.73	10.338	18 50 39.7	37.20	16 13.36	68.77	15 1.12	0.481
Mon.	17	15 31 35.27	10.373	19 5 23.0	36.36	16 13.56	68.88	14 49.16	0.516
Tues.	18	15 35 44.66	10.408	19 19 45.7	35.49	16 13.76	68.99	14 36.37	0.551
Wed.	19	15 39 54.88	10.442	19 33 47.6	34.62	16 13.95	69.10	14 22.75	0.585
Thur.	20	15 44 5.92	10.476	19 47 28.3	33.74	16 14.14	69.22	14 8.31	0.619
Frid.	21	15 48 17.77	10.509	20 0 47.2	32.82	16 14.33	69.33	13 53.05	0.652
Sat.	22	15 52 30.41	10.542	20 13 44.1	31.88	16 14.52	69.44	13 37.02	0.685
Sun.	23	15 56 43.84	10.574	20 26 18.7	30.95	16 14.71	69.55	13 20.19	0.717
Mon.	24	16 0 58.05	10.606	20 38 30.5	29.99	16 14.89	69.66	13 2.59	0.749
Tues.	25	16 5 12.99	10.637	20 50 19.0	20.01	16 15.07	69.76	12 44.25	0.779
Wed.	26	16 9 28.65	10.667	21 1 44.1	28.02	16 15.25	69.86	12 25.20	0.809
Thur.	27	16 13 45.02	10.696	21 12 45.5	27.02	16 15.42	69.96	12 5.45	0.838
Frid.	28	16 18 2.09	10.725	21 23 22.8	26.01	16 15.59	70.06	11 44.99	0.867
Sat.	29	16 22 19.84	10.753	21 33 35.7	25.00	16 15.75	70.15	11 23.84	0.895
Sun.	30	16 26 38.25	10.780	21 43 23.8	23.94	16 15.91	70.24	11 2.05	0.922
Mon.	31	16 30 57.30	10.806	S. 21 52 46.9	22.91	16 16.06	70.33	10 39.62	0.948

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	14 27 4.49	9.809	S. 14 33 38.2	47.90	16 17.49	0.047	14 43 21.98
Sun.	2	14 31 0.28	9.842	14 52 40.7	47.30	16 18.26	0.014	14 47 18.54
Mon.	3	14 34 56.87	9.876	15 11 28.6	46.68	16 18.22	0.020	14 51 15.09
Tues.	4	14 38 54.27	9.910	15 30 1.5	46.06	16 17.38	0.054	14 55 11.65
Wed.	5	14 42 52.50	9.944	15 48 19.2	45.41	16 15.71	0.088	14 59 8.21
Thur.	6	14 46 51.57	9.979	16 6 21.1	44.75	16 13.19	0.123	15 3 4.76
Frid.	7	14 50 51.48	10.013	16 24 6.8	44.06	16 9.84	0.157	15 7 1.32
Sat.	8	14 54 52.23	10.049	16 41 36.0	43.36	16 5.65	0.193	15 10 57.88
Sun.	9	14 58 53.84	10.085	16 58 48.4	42.66	16 0.59	0.229	15 14 54.43
Mon.	10	15 2 56.31	10.121	17 15 43.5	41.93	15 54.68	0.265	15 18 50.99
Tues.	11	15 6 59.65	10.157	17 32 20.9	41.18	15 47.89	0.301	15 22 47.54
Wed.	12	15 11 3.85	10.193	17 48 40.2	40.42	15 40.25	0.337	15 26 44.10
Thur.	13	15 15 8.93	10.229	18 4 41.2	39.64	15 31.73	0.373	15 30 40.66
Frid.	14	15 19 14.88	10.265	18 20 23.2	38.86	15 22.33	0.409	15 34 37.21
Sat.	15	15 23 21.68	10.301	18 35 45.9	38.04	15 12.09	0.445	15 38 33.77
Sun.	16	15 27 29.33	10.337	18 50 49.0	37.21	15 1.00	0.481	15 42 30.33
Mon.	17	15 31 37.84	10.372	19 5 32.0	36.37	14 49.04	0.516	15 46 26.88
Tues.	18	15 35 47.20	10.407	19 19 54.4	35.50	14 36.24	0.551	15 50 23.44
Wed.	19	15 39 57.39	10.441	19 33 56.0	34.63	14 22.61	0.585	15 54 20.00
Thur.	20	15 44 8.40	10.475	19 47 36.3	33.75	14 8.16	0.619	15 58 16.56
Frid.	21	15 48 20.21	10.508	20 0 54.9	32.83	13 52.90	0.652	16 2 13.11
Sat.	22	15 52 32.81	10.541	20 13 51.5	31.89	13 36.86	0.685	16 6 9.67
Sun.	23	15 56 46.20	10.573	20 26 25.7	30.96	13 20.03	0.717	16 10 6.23
Mon.	24	16 1 0.36	10.605	20 38 37.1	30.00	13 2.42	0.749	16 14 2.78
Tues.	25	16 5 15.26	10.635	20 50 25.2	29.02	12 44.08	0.779	16 17 59.34
Wed.	26	16 9 30.87	10.665	21 1 50.0	28.03	12 25.03	0.809	16 21 55.90
Thur.	27	16 13 47.18	10.694	21 12 51.1	27.03	12 5.28	0.838	16 25 52.46
Frid.	28	16 18 4.20	10.723	21 23 28.1	26.02	11 44.82	0.867	16 29 49.02
Sat.	29	16 22 21.90	10.751	21 33 40.6	25.01	11 23.67	0.895	16 33 45.57
Sun.	30	16 26 40.25	10.778	21 43 28.3	23.97	11 1.88	0.922	16 37 42.13
Mon.	31	16 30 59.24	10.804	S. 21 52 51.0	22.92	10 39.45	0.948	16 41 38.69

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. +9ˢ.8565

AT GREENWICH MEAN NOON.									Mean Time of Sidereal 0h.
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.		
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ′						
		° ′ ″	′ ″	″	″			h m s	
1	305	219 10 14.4	9 45.7	150.24	−0.36	9.9964117	−46.9	9 15 6.82	
2	306	220 10 21.2	9 52.4	150.31	0.26	.9962996	46.3	9 11 10.91	
3	307	221 10 29.6	10 0.7	150.38	−0.14	.9961891	45.6	9 7 15.00	
4	308	222 10 39.6	10 10.6	150.44	0.00	.9960803	44.9	9 3 19.09	
5	309	223 10 51.3	10 22.1	150.52	+0.13	.9959732	44.2	8 59 23.18	
6	310	224 11 4.7	10 35.3	150.59	0.26	.9958679	43.4	8 55 27.27	
7	311	225 11 19.9	10 50.4	150.67	0.38	.9957644	42.7	8 51 31.36	
8	312	226 11 37.0	11 7.4	150.75	0.49	.9956627	42.0	8 47 35.45	
9	313	227 11 56.2	11 26.4	150.83	0.58	.9955627	41.3	8 43 39.54	
10	314	228 12 17.4	11 47.4	150.92	0.63	.9954643	40.6	8 39 43.63	
11	315	229 12 40.4	12 10.2	151.00	0.65	.9953675	40.0	8 35 47.71	
12	316	230 13 5.4	12 35.1	151.08	0.65	.9952722	39.4	8 31 51.80	
13	317	231 13 32.3	13 1.9	151.16	0.61	.9951783	38.9	8 27 55.89	
14	318	232 14 1.1	13 30.5	151.23	0.54	.9950857	38.4	8 23 59.98	
15	319	233 14 31.7	14 0.9	151.31	0.44	.9949942	37.9	8 20 4.07	
16	320	234 15 4.1	14 33.1	151.38	0.34	.9949039	37.4	8 16 8.16	
17	321	235 15 38.3	15 7.2	151.45	0.22	.9948147	36.9	8 12 12.25	
18	322	236 16 14.1	15 42.9	151.52	+0.09	.9947266	36.5	8 8 16.34	
19	323	237 16 51.4	16 20.0	151.59	−0.04	.9946393	36.1	8 4 20.42	
20	324	238 17 30.2	16 58.6	151.65	0.17	.9945529	35.7	8 0 24.51	
21	325	239 18 10.4	17 38.6	151.71	0.29	.9944677	35.3	7 56 28.60	
22	326	240 18 52.0	18 20.1	151.76	0.39	.9943835	34.8	7 52 32.69	
23	327	241 19 34.9	19 2.8	151.81	0.47	.9943005	34.3	7 48 36.78	
24	328	242 20 18.9	19 46.6	151.85	0.52	.9942188	33.7	7 44 40.87	
25	329	243 21 3.9	20 31.4	151.89	0.51	.9941386	33.1	7 40 44.96	
26	330	244 21 49.8	21 17.1	151.93	0.49	.9940600	32.4	7 36 49.05	
27	331	245 22 36.7	22 3.9	151.97	0.44	.9939830	31.7	7 32 53.13	
28	332	246 23 24.6	22 51.6	152.01	0.37	.9939078	30.9	7 28 57.22	
29	333	247 24 13.5	23 40.3	152.05	0.27	.9938346	30.0	7 25 1.31	
30	334	248 25 3.3	24 29.9	152.09	0.17	.9937636	29.1	7 21 5.40	
31	335	249 25 54.0	25 20.4	152.13	−0.04	9.9936948	−28.1	7 17 9.48	

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
—9s.8296

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 28.0	16 29.5	60 19.4	+0.60	60 25.1	+0.33	9 27.0	2.10	11.0
2	16 30.1	16 29.7	60 27.3	+0.04	60 25.9	−0.27	10 17.3	2.11	12.0
3	16 28.3	16 25.9	60 20.8	−0.58	60 11.9	0.89	11 8.6	2.17	13.0
4	16 22.5	16 18.2	59 59.3	1.19	59 43.4	1.46	12 1.8	2.27	14.0
5	16 13.0	16 7.2	59 24.5	1.69	59 3.0	1.88	12 57.4	2.36	15.0
6	16 0.8	15 54.0	58 39.5	2.03	58 14.5	2.13	13 54.8	2.42	16.0
7	15 46.9	15 39.8	57 48.6	2.17	57 22.5	2.17	14 52.9	2.41	17.0
8	15 32.8	15 25.9	56 56.7	2.13	56 31.6	2.05	15 49.8	2.32	18.0
9	15 19.4	15 13.4	56 7.7	1.93	55 45.4	1.78	16 43.9	2.18	19.0
10	15 7.9	15 2.9	55 25.1	1.61	55 6.9	1.42	17 34.3	2.02	20.0
11	14 58.5	14 54.9	54 51.0	1.22	54 37.6	1.01	18 20.9	1.87	21.0
12	14 52.0	14 49.7	54 26.8	0.79	54 18.6	0.58	19 4.3	1.75	22.0
13	14 48.2	14 47.4	54 13.0	−0.36	54 9.9	−0.14	19 45.3	1.67	23.0
14	14 47.2	14 47.7	54 9.4	+0.05	54 11.2	+0.24	20 25.1	1.64	24.0
15	14 48.8	14 50.5	54 15.2	0.42	54 21.3	0.50	21 4.6	1.66	25.0
16	14 52.7	14 55.3	54 29.3	0.74	54 39.1	0.87	21 45.0	1.72	26.0
17	14 58.4	15 1.8	54 50.4	0.99	55 2.9	1.09	22 27.3	1.82	27.0
18	15 5.5	15 9.5	55 16.4	1.16	55 30.7	1.22	23 12.6	1.96	28.0
19	15 13.5	15 17.6	55 45.6	1.26	56 0.9	1.28	☌		29.0
20	15 21.7	15 25.9	56 16.3	1.28	56 31.6	1.27	0 1.7	2.13	0.3
21	15 30.0	15 34.1	56 46.8	1.25	57 1.7	1.22	0 54.9	2.30	1.3
22	15 38.1	15 41.9	57 16.2	1.19	57 30.2	1.15	1 51.7	2.42	2.3
23	15 45.6	15 49.1	57 43.7	1.10	57 56.6	1.05	2 50.4	2.46	3.3
24	15 52.4	15 55.6	58 8.9	1.00	58 20.7	0.95	3 49.2	2.42	4.3
25	15 58.7	16 1.6	58 31.8	0.90	58 42.4	0.85	4 46.0	2.31	5.3
26	16 4.2	16 6.7	58 52.3	0.79	59 1.4	0.72	5 40.0	2.19	6.3
27	16 9.0	16 10.9	59 9.6	0.65	59 16.9	0.56	6 31.3	2.09	7.3
28	16 12.6	16 13.9	59 23.0	0.46	59 27.8	0.34	7 20.6	2.03	8.3
29	16 14.8	16 15.2	59 31.1	+0.20	59 32.6	+0.04	8 9.1	2.02	9.3
30	16 15.1	16 14.3	59 32.1	−0.14	59 29.4	−0.32	8 58.1	2.07	10.3
31	16 13.0	16 11.0	59 24.4	−0.51	59 17.0	−0.71	9 48.8	2.15	11.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 51 10.53	2.1958	S. 5 18 55.7	16.678
1	23 53 22.24	2.1947	5 2 14.0	16.713
2	23 55 33.89	2.1937	4 45 30.2	16.746
3	23 57 45.48	2.1928	4 28 44.5	16.778
4	23 59 57.02	2.1920	4 11 56.9	16.807
5	0 2 8.52	2.1913	3 55 7.6	16.835
6	0 4 19.97	2.1906	3 38 16.7	16.862
7	0 6 31.38	2.1899	3 21 24.2	16.887
8	0 8 42.76	2.1893	3 4 30.3	16.910
9	0 10 54.11	2.1889	2 47 35.1	16.931
10	0 13 5.43	2.1886	2 30 38.6	16.950
11	0 15 16.74	2.1883	2 13 41.0	16.968
12	0 17 28.03	2.1881	1 56 42.5	16.984
13	0 19 39.31	2.1880	1 39 43.0	16.998
14	0 21 50.59	2.1879	1 22 42.7	17.010
15	0 24 1.86	2.1879	1 5 41.7	17.021
16	0 26 13.14	2.1880	0 48 40.2	17.030
17	0 28 24.43	2.1882	0 31 38.2	17.037
18	0 30 35.72	2.1885	S. 0 14 35.8	17.042
19	0 32 47.03	2.1888	N. 0 2 26.8	17.045
20	0 34 58.37	2.1892	0 19 29.6	17.047
21	0 37 9.73	2.1896	0 36 32.4	17.047
22	0 39 21.12	2.1901	0 53 35.2	17.045
23	0 41 32.55	2.1908	N. 1 10 37.8	17.040

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 43 44.01	2.1915	N. 1 27 40.0	17.034
1	0 45 55.52	2.1923	1 44 41.8	17.027
2	0 48 7.08	2.1932	2 1 43.2	17.018
3	0 50 18.69	2.1940	2 18 44.0	17.007
4	0 52 30.36	2.1950	2 35 44.0	16.994
5	0 54 42.09	2.1961	2 52 43.2	16.979
6	0 56 53.89	2.1972	3 9 41.5	16.962
7	0 59 5.76	2.1984	3 26 38.7	16.944
8	1 1 17.70	2.1998	3 43 34.8	16.924
9	1 3 29.73	2.2012	4 0 29.6	16.902
10	1 5 41.84	2.2026	4 17 23.0	16.878
11	1 7 54.04	2.2041	4 34 14.9	16.852
12	1 10 6.33	2.2057	4 51 5.2	16.824
13	1 12 18.72	2.2073	5 7 53.8	16.795
14	1 14 31.21	2.2090	5 24 40.6	16.764
15	1 16 43.81	2.2108	5 41 25.5	16.732
16	1 18 56.51	2.2127	5 58 8.4	16.697
17	1 21 9.32	2.2146	6 14 49.1	16.660
18	1 23 22.26	2.2166	6 31 27.6	16.621
19	1 25 35.32	2.2187	6 48 3.7	16.581
20	1 27 48.50	2.2208	7 4 37.3	16.539
21	1 30 1.81	2.2230	7 21 8.3	16.495
22	1 32 15.26	2.2252	7 37 36.7	16.449
23	1 34 28.84	2.2275	7 54 2.3	16.401
24	1 36 42.56	2.2299	N. 8 10 24.8	16.351

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 36 42.56	2.2299	N. 8 10 24.8	16.351
1	1 38 56.43	2.2323	8 26 44.3	16.300
2	1 41 10.44	2.2348	8 43 0.8	16.247
3	1 43 24.60	2.2374	8 59 14.0	16.192
4	1 45 38.93	2.2401	9 15 23.8	16.135
5	1 47 53.42	2.2428	9 31 30.2	16.077
6	1 50 8.06	2.2455	9 47 33.0	16.016
7	1 52 22.87	2.2483	10 3 32.1	15.953
8	1 54 37.85	2.2511	10 19 27.4	15.889
9	1 56 53.00	2.2540	10 35 18.8	15.823
10	1 59 8.33	2.2569	10 51 6.2	15.756
11	2 1 23.83	2.2598	11 6 49.5	15.687
12	2 3 39.51	2.2629	11 22 28.6	15.616
13	2 5 55.38	2.2660	11 38 3.4	15.543
14	2 8 11.43	2.2691	11 53 33.7	15.468
15	2 10 27.67	2.2723	12 8 59.5	15.391
16	2 12 44.11	2.2755	12 24 20.6	15.312
17	2 15 0.74	2.2788	12 39 36.9	15.232
18	2 17 17.56	2.2821	12 54 48.4	15.150
19	2 19 34.58	2.2854	13 9 54.9	15.067
20	2 21 51.81	2.2888	13 24 56.4	14.981
21	2 24 9.24	2.2922	13 39 52.7	14.894
22	2 26 26.88	2.2957	13 54 43.7	14.805
23	2 28 44.73	2.2992	N.14 9 29.3	14.714

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 31 2.78	2.3027	N.14 24 9.4	14.622
1	2 33 21.04	2.3062	14 38 43.9	14.528
2	2 35 39.52	2.3097	14 53 12.7	14.432
3	2 37 58.21	2.3133	15 7 35.7	14.335
4	2 40 17.12	2.3169	15 21 52.9	14.236
5	2 42 36.25	2.3206	15 36 4.1	14.135
6	2 44 55.59	2.3242	15 50 9.1	14.032
7	2 47 15.15	2.3278	16 4 7.9	13.928
8	2 49 34.93	2.3315	16 18 0.5	13.822
9	2 51 54.93	2.3352	16 31 46.7	13.715
10	2 54 15.16	2.3390	16 45 26.3	13.606
11	2 56 35.61	2.3427	16 58 59.4	13.496
12	2 58 56.28	2.3464	17 12 25.8	13.384
13	3 1 17.17	2.3501	17 25 45.5	13.271
14	3 3 38.29	2.3538	17 38 58.3	13.155
15	3 5 59.63	2.3575	17 52 4.1	13.038
16	3 8 21.19	2.3613	18 5 2.9	12.920
17	3 10 42.98	2.3650	18 17 54.6	12.801
18	3 13 4.99	2.3687	18 30 39.0	12.680
19	3 15 27.22	2.3723	18 43 16.1	12.557
20	3 17 49.67	2.3760	18 55 45.8	12.433
21	3 20 12.34	2.3797	19 8 8.0	12.307
22	3 22 35.24	2.3834	19 20 22.7	12.180
23	3 24 58.36	2.3871	19 32 29.7	12.052
24	3 27 21.69	2.3907	N.19 44 28.9	11.922

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 27 21.69	2.3907	N.19 44 28.9	11.922
1	3 29 45.24	2.3943	19 56 20.3	11.791
2	3 32 9.00	2.3979	20 8 3.8	11.658
3	3 34 32.98	2.4014	20 19 39.3	11.523
4	3 36 57.17	2.4049	20 31 6.6	11.388
5	3 39 21.57	2.4084	20 42 25.8	11.252
6	3 41 46.18	2.4119	20 53 36.8	11.114
7	3 44 10.99	2.4153	21 4 39.4	10.974
8	3 46 36.01	2.4187	21 15 33.7	10.834
9	3 49 1.23	2.4220	21 26 19.6	10.693
10	3 51 26.65	2.4253	21 36 56.9	10.551
11	3 53 52.26	2.4285	21 47 25.6	10.407
12	3 56 18.07	2.4317	21 57 45.7	10.262
13	3 58 44.07	2.4348	22 7 57.1	10.116
14	4 1 10.25	2.4379	22 17 59.6	9.969
15	4 3 36.62	2.4409	22 27 53.3	9.820
16	4 6 3.16	2.4439	22 37 38.0	9.670
17	4 8 29.88	2.4468	22 47 13.7	9.520
18	4 10 56.77	2.4496	22 56 40.4	9.369
19	4 13 23.83	2.4524	23 5 58.0	9.217
20	4 15 51.06	2.4551	23 15 6.4	9.064
21	4 18 18.44	2.4577	23 24 5.6	8.909
22	4 20 45.98	2.4603	23 32 55.5	8.754
23	4 23 13.67	2.4628	N.23 41 36.1	8.598

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 25 41.51	2.4652	N.23 50 7.3	8.441
1	4 28 9.49	2.4675	23 58 29.0	8.283
2	4 30 37.61	2.4697	24 6 41.2	8.125
3	4 33 5.86	2.4719	24 14 44.0	7.966
4	4 35 34.24	2.4739	24 22 37.2	7.806
5	4 38 2.74	2.4759	24 30 20.8	7.646
6	4 40 31.35	2.4778	24 37 54.7	7.485
7	4 43 0.07	2.4796	24 45 18.9	7.323
8	4 45 28.90	2.4813	24 52 33.4	7.160
9	4 47 57.83	2.4829	24 59 38.1	6.997
10	4 50 26.85	2.4844	25 6 33.0	6.833
11	4 52 55.96	2.4858	25 13 18.1	6.669
12	4 55 25.15	2.4871	25 19 53.3	6.504
13	4 57 54.41	2.4883	25 26 18.6	6.339
14	5 0 23.75	2.4894	25 32 34.0	6.173
15	5 2 53.15	2.4904	25 38 39.4	6.007
16	5 5 22.60	2.4914	25 44 34.9	5.841
17	5 7 52.11	2.4922	25 50 20.4	5.674
18	5 10 21.66	2.4928	25 55 55.8	5.507
19	5 12 51.24	2.4933	26 1 21.2	5.340
20	5 15 20.86	2.4937	26 6 36.6	5.173
21	5 17 50.50	2.4941	26 11 41.9	5.005
22	5 20 20.15	2.4944	26 16 37.2	4.837
23	5 22 49.82	2.4945	26 21 22.4	4.669
24	5 25 19.49	2.4944	N.26 25 57.5	4.501

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 25 19.49	2.4944	N.26 25 57.5	4.501
1	5 27 49.15	2.4943	26 30 22.5	4.333
2	5 30 18.81	2.4941	26 34 37.4	4.165
3	5 32 48.45	2.4937	26 38 42.2	3.996
4	5 35 18.06	2.4932	26 42 36.9	3.827
5	5 37 47.64	2.4927	26 46 21.5	3.658
6	5 40 17.18	2.4920	26 49 55.9	3.490
7	5 42 46.68	2.4912	26 53 20.2	3.322
8	5 45 16.12	2.4902	26 56 34.5	3.154
9	5 47 45.50	2.4891	26 59 38.7	2.986
10	5 50 14.81	2.4879	27 2 32.8	2.818
11	5 52 44.04	2.4865	27 5 16.8	2.650
12	5 55 13.19	2.4850	27 7 50.8	2.482
13	5 57 42.25	2.4835	27 10 14.7	2.315
14	6 0 11.21	2.4819	27 12 28.6	2.148
15	6 2 40.07	2.4801	27 14 32.5	1.982
16	6 5 8.82	2.4782	27 16 26.4	1.815
17	6 7 37.45	2.4761	27 18 10.3	1.649
18	6 10 5.95	2.4739	27 19 44.3	1.483
19	6 12 34.32	2.4717	27 21 8.3	1.318
20	6 15 2.55	2.4693	27 22 22.5	1.154
21	6 17 30.63	2.4668	27 23 26.8	0.990
22	6 19 58.57	2.4642	27 24 21.3	0.826
23	6 22 26.35	2.4615	N.27 25 5.9	0.663

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 24 53.95	2.4587	N.27 25 40.8	0.500
1	6 27 21.38	2.4557	27 26 5.9	0.338
2	6 29 48.63	2.4526	27 26 21.3	0.176
3	6 32 15.70	2.4495	27 26 27.0	+0.015
4	6 34 42.57	2.4462	27 26 23.1	−0.145
5	6 37 9.24	2.4428	27 26 9.6	0.304
6	6 39 35.71	2.4393	27 25 46.6	0.463
7	6 42 1.97	2.4358	27 25 14.1	0.622
8	6 44 28.01	2.4321	27 24 32.0	0.779
9	6 46 53.82	2.4283	27 23 40.5	0.936
10	6 49 19.41	2.4244	27 22 39.7	1.092
11	6 51 44.76	2.4204	27 21 29.5	1.247
12	6 54 9.86	2.4163	27 20 10.0	1.402
13	6 56 34.72	2.4122	27 18 41.3	1.556
14	6 58 59.32	2.4080	27 17 3.3	1.709
15	7 1 23.66	2.4036	27 15 16.2	1.861
16	7 3 47.75	2.3992	27 13 20.0	2.012
17	7 6 11.57	2.3947	27 11 14.8	2.162
18	7 8 35.11	2.3901	27 9 0.6	2.311
19	7 10 58.38	2.3854	27 6 37.5	2.460
20	7 13 21.36	2.3806	27 4 5.4	2.607
21	7 15 44.05	2.3757	27 1 24.5	2.754
22	7 18 6.45	2.3708	26 58 34.9	2.899
23	7 20 28.55	2.3658	26 55 36.6	3.044
24	7 22 50.35	2.3608	N.26 52 29.6	3.186

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 9.					TUESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 22 50.35	2.3608	N.26 52 29.6	3.188	0	9 9 32.05	2.0789	N.21 54 8.3	8.822
1	7 25 11.84	2.3557	26 49 14.0	3.331	1	9 11 36.60	2.0730	21 45 16.2	8.913
2	7 27 33.03	2.3505	26 45 49.9	3.472	2	9 13 40.81	2.0672	21 36 18.8	9.003
3	7 29 53.91	2.3452	26 42 17.3	3.613	3	9 15 44.67	2.0614	21 27 16.0	9.091
4	7 32 14.46	2.3399	26 38 36.3	3.753	4	9 17 48.18	2.0556	21 18 7.9	9.178
5	7 34 34.69	2.3345	26 34 47.0	3.891	5	9 19 51.34	2.0498	21 8 54.6	9.264
6	7 36 54.60	2.3291	26 30 49.4	4.029	6	9 21 54.16	2.0441	20 59 36.2	9.350
7	7 39 14.18	2.3237	26 26 43.6	4.166	7	9 23 56.64	2.0385	20 50 12.6	9.435
8	7 41 33.44	2.3181	26 22 29.5	4.302	8	9 25 58.78	2.0329	20 40 44.0	9.519
9	7 43 52.36	2.3125	26 18 7.3	4.436	9	9 28 0.59	2.0273	20 31 10.4	9.601
10	7 46 10.94	2.3069	26 13 37.2	4.569	10	9 30 2.06	2.0217	20 21 31.9	9.682
11	7 48 29.18	2.3012	26 8 59.1	4.702	11	9 32 3.20	2.0162	20 11 48.5	9.763
12	7 50 47.08	2.2955	26 4 13.0	4.833	12	9 34 4.01	2.0107	20 2 0.4	9.843
13	7 53 4.63	2.2897	25 59 19.1	4.963	13	9 36 4.49	2.0053	19 52 7.5	9.921
14	7 55 21.84	2.2839	25 54 17.4	5.092	14	9 38 4.65	2.0000	19 42 9.9	9.999
15	7 57 38.70	2.2781	25 49 8.0	5.220	15	9 40 4.49	1.9947	19 32 7.6	10.076
16	7 59 55.21	2.2722	25 43 51.0	5.347	16	9 42 4.01	1.9894	19 22 0.8	10.152
17	8 2 11.36	2.2663	25 38 26.4	5.473	17	9 44 3.22	1.9842	19 11 49.5	10.226
18	8 4 27.16	2.2604	25 32 54.3	5.598	18	9 46 2.11	1.9790	19 1 33.7	10.300
19	8 6 42.60	2.2544	25 27 14.7	5.721	19	9 48 0.69	1.9738	18 51 13.5	10.373
20	8 8 57.69	2.2484	25 21 27.8	5.843	20	9 49 58.96	1.9687	18 40 49.0	10.445
21	8 11 12.42	2.2424	25 15 33.6	5.964	21	9 51 56.93	1.9637	18 30 20.2	10.516
22	8 13 26.78	2.2364	25 9 32.1	6.084	22	9 53 54.60	1.9587	18 19 47.1	10.586
23	8 15 40.78	2.2303	N.25 3 23.4	6.204	23	9 55 51.97	1.9538	N.18 9 9.8	10.655
	MONDAY 10.					WEDNESDAY 12.			
0	8 17 54.42	2.2243	N.24 57 7.6	6.322	0	9 57 49.05	1.9489	N.17 58 28.5	10.723
1	8 20 7.69	2.2182	24 50 44.7	6.439	1	9 59 45.83	1.9440	17 47 43.1	10.791
2	8 22 20.60	2.2121	24 44 14.9	6.555	2	10 1 42.33	1.9392	17 36 53.6	10.857
3	8 24 33.14	2.2060	24 37 38.2	6.669	3	10 3 38.54	1.9345	17 26 0.1	10.923
4	8 26 45.32	2.1999	24 30 54.6	6.782	4	10 5 34.47	1.9298	17 15 2.8	10.988
5	8 28 57.13	2.1938	24 24 4.2	6.895	5	10 7 30.12	1.9252	17 4 1.6	11.052
6	8 31 8.57	2.1877	24 17 7.2	7.007	6	10 9 25.49	1.9207	16 52 56.5	11.115
7	8 33 19.64	2.1815	24 10 3.5	7.117	7	10 11 20.59	1.9162	16 41 47.7	11.177
8	8 35 30.35	2.1754	24 2 53.2	7.226	8	10 13 15.43	1.9117	16 30 35.2	11.238
9	8 37 40.69	2.1693	23 55 36.4	7.333	9	10 15 10.00	1.9073	16 19 19.1	11.299
10	8 39 50.66	2.1632	23 48 13.2	7.440	10	10 17 4.30	1.9030	16 7 59.3	11.360
11	8 42 0.26	2.1570	23 40 43.6	7.546	11	10 18 58.35	1.8987	15 56 35.9	11.418
12	8 44 9.50	2.1509	23 33 7.7	7.651	12	10 20 52.14	1.8945	15 45 9.1	11.476
13	8 46 18.37	2.1448	23 25 25.5	7.754	13	10 22 45.68	1.8903	15 33 38.8	11.533
14	8 48 26.88	2.1387	23 17 37.2	7.856	14	10 24 38.98	1.8862	15 22 5.1	11.589
15	8 50 35.02	2.1327	23 9 42.8	7.958	15	10 26 32.03	1.8822	15 10 28.1	11.645
16	8 52 42.80	2.1266	23 1 42.3	8.059	16	10 28 24.85	1.8782	14 58 47.7	11.700
17	8 54 50.22	2.1206	22 53 35.8	8.158	17	10 30 17.43	1.8743	14 47 4.1	11.754
18	8 56 57.27	2.1145	22 45 23.4	8.256	18	10 32 9.77	1.8705	14 35 17.2	11.807
19	8 59 3.96	2.1085	22 37 5.2	8.353	19	10 34 1.89	1.8667	14 23 27.1	11.860
20	9 1 10.29	2.1025	22 28 41.1	8.449	20	10 35 53.78	1.8630	14 11 34.0	11.912
21	9 3 16.26	2.0966	22 20 11.3	8.543	21	10 37 45.45	1.8593	13 59 37.8	11.963
22	9 5 21.88	2.0907	22 11 35.9	8.637	22	10 39 36.90	1.8557	13 47 38.5	12.013
23	9 7 27.14	2.0848	22 2 54.9	8.730	23	10 41 28.14	1.8522	13 35 36.2	12.063
24	9 9 32.05	2.0789	N.21 54 8.3	8.822	24	10 43 19.17	1.8488	N.13 23 31.0	12.111

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
		THURSDAY 13.					SATURDAY 15.		
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 43 19.17	1.8488	N.13 23 31.0	12.111	0	12 9 21.84	1.7630	N. 2 59 37.1	13.623
1	10 45 10.00	1.8454	13 11 22.9	12.159	1	12 11 7.62	1.7629	2 45 59.2	13.638
2	10 47 0.62	1.8421	12 59 11.9	12.206	2	12 12 53.39	1.7629	2 32 20.5	13.653
3	10 48 51.05	1.8388	12 46 58.1	12.253	3	12 14 39.17	1.7630	2 18 40.9	13.667
4	10 50 41.28	1.8356	12 34 41.6	12.298	4	12 16 24.95	1.7631	2 5 0.5	13.680
5	10 52 31.32	1.8325	12 22 22.4	12.343	5	12 18 10.74	1.7633	1 51 19.4	13.692
6	10 54 21.18	1.8294	12 10 0.5	12.387	6	12 19 56.55	1.7636	1 37 37.5	13.703
7	10 56 10.85	1.8264	11 57 36.0	12.431	7	12 21 42.38	1.7640	1 23 55.0	13.714
8	10 58 0.35	1.8235	11 45 8.8	12.473	8	12 23 28.23	1.7644	1 10 11.8	13.724
9	10 59 49.67	1.8207	11 32 39.1	12.515	9	12 25 14.11	1.7649	0 56 28.0	13.734
10	11 1 38.83	1.8179	11 20 7.0	12.556	10	12 27 0.02	1.7655	0 42 43.7	13.743
11	11 3 27.82	1.8152	11 7 32.4	12.597	11	12 28 45.97	1.7662	0 28 58.9	13.751
12	11 5 16.65	1.8125	10 54 55.3	12.637	12	12 30 31.96	1.7669	0 15 13.6	13.759
13	11 7 5.32	1.8099	10 42 15.9	12.677	13	12 32 17.99	1.7677	N. 0 1 27.8	13.766
14	11 8 53.84	1.8074	10 29 34.1	12.716	14	12 34 4.08	1.7685	S. 0 12 18.3	13.772
15	11 10 42.21	1.8049	10 16 50.0	12.753	15	12 35 50.22	1.7694	0 26 4.7	13.777
16	11 12 30.43	1.8025	10 4 3.7	12.790	16	12 37 36.41	1.7704	0 39 51.5	13.782
17	11 14 18.51	1.8002	9 51 15.2	12.827	17	12 39 22.66	1.7714	0 53 38.6	13.786
18	11 16 6.46	1.7980	9 38 24.5	12.863	18	12 41 8.98	1.7726	1 7 25.8	13.789
19	11 17 54.27	1.7958	9 25 31.7	12.896	19	12 42 55.37	1.7738	1 21 13.2	13.791
20	11 19 41.96	1.7937	9 12 36.8	12.932	20	12 44 41.84	1.7751	1 35 0.7	13.793
21	11 21 29.52	1.7917	8 59 39.9	12.966	21	12 46 28.39	1.7764	1 48 48.3	13.794
22	11 23 16.96	1.7897	8 46 40.9	12.999	22	12 48 15.01	1.7778	2 2 36.0	13.794
23	11 25 4.28	1.7878	N. 8 33 40.0	13.031	23	12 50 1.72	1.7793	S. 2 16 23.7	13.794
		FRIDAY 14.					SUNDAY 16.		
0	11 26 51.49	1.7860	N. 8 20 37.2	13.063	0	12 51 48.53	1.7809	S. 2 30 11.3	13.793
1	11 28 38.59	1.7842	8 7 32.5	13.094	1	12 53 35.43	1.7826	2 43 58.8	13.791
2	11 30 25.59	1.7825	7 54 25.9	13.124	2	12 55 22.44	1.7843	2 57 46.2	13.788
3	11 32 12.49	1.7809	7 41 17.6	13.153	3	12 57 9.55	1.7861	3 11 33.4	13.784
4	11 33 59.30	1.7793	7 28 7.5	13.182	4	12 58 56.77	1.7879	3 25 20.3	13.780
5	11 35 46.01	1.7778	7 14 55.7	13.211	5	13 0 44.10	1.7898	3 39 7.0	13.775
6	11 37 32.64	1.7764	7 1 42.2	13.239	6	13 2 31.55	1.7918	3 52 53.3	13.769
7	11 39 19.18	1.7751	6 48 27.1	13.266	7	13 4 19.12	1.7939	4 6 39.3	13.763
8	11 41 5.65	1.7738	6 35 10.3	13.292	8	13 6 6.82	1.7960	4 20 24.8	13.756
9	11 42 52.04	1.7726	6 21 52.0	13.318	9	13 7 54.65	1.7982	4 34 9.9	13.748
10	11 44 38.36	1.7714	6 8 32.2	13.343	10	13 9 42.61	1.8005	4 47 54.5	13.739
11	11 46 24.61	1.7703	5 55 10.9	13.368	11	13 11 30.71	1.8028	5 1 38.6	13.729
12	11 48 10.80	1.7694	5 41 48.1	13.392	12	13 13 18.95	1.8052	5 15 22.0	13.718
13	11 49 56.94	1.7685	5 28 23.9	13.414	13	13 15 7.34	1.8077	5 29 4.8	13.707
14	11 51 43.02	1.7676	5 14 58.4	13.436	14	13 16 55.88	1.8103	5 42 46.9	13.695
15	11 53 29.05	1.7668	5 1 31.5	13.458	15	13 18 44.57	1.8129	5 56 28.2	13.682
16	11 55 15.04	1.7661	4 48 3.4	13.479	16	13 20 33.43	1.8156	6 10 8.7	13.668
17	11 57 0.99	1.7655	4 34 34.0	13.499	17	13 22 22.45	1.8184	6 23 48.4	13.653
18	11 58 46.90	1.7649	4 21 3.5	13.519	18	13 24 11.64	1.8213	6 37 27.1	13.638
19	12 0 32.78	1.7644	4 7 31.8	13.538	19	13 26 1.00	1.8242	6 51 4.9	13.622
20	12 2 18.63	1.7640	3 53 58.9	13.556	20	13 27 50.54	1.8272	7 4 41.7	13.604
21	12 4 4.46	1.7637	3 40 25.0	13.574	21	13 29 40.26	1.8302	7 18 17.4	13.586
22	12 5 50.27	1.7634	3 26 50.0	13.591	22	13 31 30.17	1.8333	7 31 52.0	13.567
23	12 7 36.06	1.7631	3 13 14.0	13.607	23	13 33 20.27	1.8365	7 45 25.4	13.547
24	12 9 21.84	1.7630	N. 2 59 37.1	13.623	24	13 35 10.55	1.8398	S. 7 58 57.6	13.526

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 35 10.55	1.8398	S. 7 58 57.6	13.526
1	13 37 1.03	1.8431	8 12 28.5	13.504
2	13 38 51.72	1.8465	8 25 58.1	13.481
3	13 40 42.62	1.8500	8 39 26.3	13.458
4	13 42 33.72	1.8535	8 52 53.0	13.433
5	13 44 25.03	1.8571	9 6 18.3	13.408
6	13 46 16.57	1.8608	9 19 42.0	13.381
7	13 48 8.33	1.8645	9 33 4.1	13.354
8	13 50 0.31	1.8683	9 46 24.5	13.326
9	13 51 52.52	1.8722	9 59 43.2	13.297
10	13 53 44.97	1.8761	10 13 0.1	13.267
11	13 55 37.66	1.8801	10 26 15.1	13.235
12	13 57 30.58	1.8842	10 39 28.3	13.203
13	13 59 23.75	1.8883	10 52 39.5	13.170
14	14 1 17.17	1.8925	11 5 48.7	13.136
15	14 3 10.85	1.8968	11 18 55.8	13.101
16	14 5 4.78	1.9011	11 32 0.8	13.064
17	14 6 58.98	1.9055	11 45 3.6	13.027
18	14 8 53.44	1.9099	11 58 4.0	12.988
19	14 10 48.17	1.9144	12 11 2.1	12.949
20	14 12 43.17	1.9190	12 23 57.9	12.909
21	14 14 38.45	1.9237	12 36 51.2	12.867
22	14 16 34.01	1.9284	12 49 42.0	12.824
23	14 18 29.85	1.9331	S. 13 2 30.2	12.781

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 20 25.98	1.9379	S. 13 15 15.7	12.736
1	14 22 22.40	1.9428	13 27 58.5	12.691
2	14 24 19.12	1.9478	13 40 38.6	12.644
3	14 26 16.13	1.9528	13 53 15.8	12.596
4	14 28 13.45	1.9579	14 5 50.1	12.547
5	14 30 11.08	1.9630	14 18 21.4	12.496
6	14 32 9.01	1.9681	14 30 49.6	12.444
7	14 34 7.25	1.9733	14 43 14.7	12.392
8	14 36 5.81	1.9786	14 55 36.6	12.338
9	14 38 4.69	1.9840	15 7 55.3	12.283
10	14 40 3.89	1.9894	15 20 10.6	12.227
11	14 42 3.42	1.9948	15 32 22.5	12.169
12	14 44 3.27	2.0003	15 44 30.9	12.110
13	14 46 3.45	2.0058	15 56 35.8	12.051
14	14 48 3.97	2.0114	16 8 37.0	11.990
15	14 50 4.83	2.0171	16 20 34.6	11.928
16	14 52 6.02	2.0228	16 32 28.4	11.865
17	14 54 7.56	2.0285	16 44 18.4	11.800
18	14 56 9.44	2.0343	16 56 4.4	11.734
19	14 58 11.67	2.0402	17 7 46.5	11.667
20	15 0 14.26	2.0460	17 19 24.5	11.599
21	15 2 17.20	2.0519	17 30 58.4	11.529
22	15 4 20.49	2.0579	17 42 28.0	11.458
23	15 6 24.14	2.0639	17 53 53.3	11.386
24	15 8 28.16	2.0700	S. 18 5 14.3	11.313

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 8 28.16	2.0700	S. 18 5 14.3	11.313
1	15 10 32.54	2.0761	18 16 30.9	11.238
2	15 12 37.29	2.0822	18 27 42.9	11.162
3	15 14 42.40	2.0883	18 38 50.3	11.084
4	15 16 47.88	2.0945	18 49 53.0	11.005
5	15 18 53.73	2.1007	19 0 51.0	10.926
6	15 20 59.96	2.1069	19 11 44.1	10.845
7	15 23 6.56	2.1132	19 22 32.3	10.763
8	15 25 13.54	2.1195	19 33 15.6	10.679
9	15 27 20.90	2.1258	19 43 53.8	10.593
10	15 29 28.64	2.1321	19 54 26.7	10.506
11	15 31 36.76	2.1385	20 4 54.4	10.418
12	15 33 45.26	2.1449	20 15 16.9	10.329
13	15 35 54.15	2.1513	20 25 34.0	10.238
14	15 38 3.42	2.1577	20 35 45.5	10.146
15	15 40 13.08	2.1642	20 45 51.5	10.053
16	15 42 23.12	2.1707	20 55 51.9	9.958
17	15 44 33.55	2.1772	21 5 46.5	9.862
18	15 46 44.38	2.1836	21 15 35.3	9.765
19	15 48 55.59	2.1901	21 25 18.2	9.666
20	15 51 7.19	2.1966	21 34 55.2	9.566
21	15 53 19.18	2.2031	21 44 26.1	9.464
22	15 55 31.56	2.2096	21 53 50.9	9.361
23	15 57 44.33	2.2161	S. 22 3 9.4	9.256

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 59 57.49	2.2226	S. 22 12 21.6	9.150
1	16 2 11.04	2.2291	22 21 27.4	9.043
2	16 4 24.98	2.2356	22 30 26.8	8.935
3	16 6 39.31	2.2421	22 39 19.7	8.826
4	16 8 54.03	2.2485	22 48 5.9	8.715
5	16 11 9.13	2.2549	22 56 45.4	8.602
6	16 13 24.62	2.2614	23 5 18.1	8.488
7	16 15 40.50	2.2678	23 13 43.9	8.373
8	16 17 56.76	2.2742	23 22 2.8	8.256
9	16 20 13.40	2.2806	23 30 14.6	8.138
10	16 22 30.43	2.2870	23 38 19.3	8.019
11	16 24 47.84	2.2933	23 46 16.8	7.898
12	16 27 5.62	2.2996	23 54 7.1	7.776
13	16 29 23.78	2.3058	24 1 50.0	7.653
14	16 31 42.32	2.3120	24 9 25.4	7.528
15	16 34 1.23	2.3182	24 16 53.3	7.402
16	16 36 20.51	2.3243	24 24 13.6	7.275
17	16 38 40.15	2.3304	24 31 26.2	7.146
18	16 41 0.16	2.3365	24 38 31.1	7.016
19	16 43 20.53	2.3425	24 45 28.2	6.885
20	16 45 41.26	2.3484	24 52 17.3	6.752
21	16 48 2.35	2.3543	24 58 58.4	6.618
22	16 50 23.78	2.3601	25 5 31.5	6.483
23	16 52 45.56	2.3659	25 11 56.5	6.347
24	16 55 7.69	2.3716	S. 25 18 13.2	6.210

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 55 7.69	2.3716	S.25 18 13.2	6.210
1	16 57 30.16	2.3773	25 24 21.6	6.071
2	16 59 52.97	2.3829	25 30 21.7	5.931
3	17 2 16.11	2.3884	25 36 13.4	5.790
4	17 4 39.58	2.3939	25 41 56.5	5.648
5	17 7 3.37	2.3993	25 47 31.1	5.504
6	17 9 27.49	2.4046	25 52 57.0	5.359
7	17 11 51.92	2.4098	25 58 14.2	5.214
8	17 14 16.66	2.4149	26 3 22.7	5.067
9	17 16 41.71	2.4199	26 8 22.3	4.919
10	17 19 7.05	2.4249	26 13 13.0	4.770
11	17 21 32.69	2.4298	26 17 54.7	4.620
12	17 23 58.62	2.4346	26 22 27.4	4.469
13	17 26 24.83	2.4393	26 26 51.0	4.317
14	17 28 51.33	2.4438	26 31 5.5	4.164
15	17 31 18.10	2.4483	26 35 10.8	4.010
16	17 33 45.13	2.4527	26 39 6.7	3.855
17	17 36 12.42	2.4570	26 42 53.3	3.699
18	17 38 39.97	2.4612	26 46 30.6	3.542
19	17 41 7.76	2.4653	26 49 58.5	3.385
20	17 43 35.80	2.4693	26 53 16.8	3.227
21	17 46 4 07	2.4731	26 56 25.6	3.067
22	17 48 32.57	2.4768	26 59 24.8	2.907
23	17 51 1.29	2.4805	S.27 2 14.4	2.746

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 53 30.23	2.4840	S.27 4 54.3	2.584
1	17 55 59.38	2.4874	27 7 24.4	2.421
2	17 58 28.72	2.4907	27 9 44.8	2.258
3	18 0 58.26	2.4938	27 11 55.4	2.094
4	18 3 27.98	2.4968	27 13 56.1	1.929
5	18 5 57.87	2.4997	27 15 46.9	1.764
6	18 8 27.94	2.5025	27 17 27.8	1.598
7	18 10 58.17	2.5052	27 18 58.7	1.432
8	18 13 28.56	2.5077	27 20 19.6	1.265
9	18 15 59.09	2.5100	27 21 30.4	1.097
10	18 18 29.76	2.5122	27 22 31.2	0.929
11	18 21 0.56	2.5144	27 23 21.9	0.761
12	18 23 31.49	2.5164	27 24 2.5	0.592
13	18 26 2.53	2.5183	27 24 32.9	0.423
14	18 28 33.68	2.5200	27 24 53.2	0.253
15	18 31 4.93	2.5216	27 25 3.3	–0.083
16	18 33 36.27	2.5230	27 25 3.1	+0.087
17	18 36 7.69	2.5243	27 24 52.7	0.258
18	18 38 39.19	2.5255	27 24 32.2	0.429
19	18 41 10.76	2.5266	27 24 1.4	0.600
20	18 43 42.38	2.5275	27 23 20.2	0.771
21	18 46 14.05	2.5283	27 22 28.8	0.943
22	18 48 45.77	2.5289	27 21 27.1	1.114
23	18 51 17.52	2.5293	27 20 15.2	1.285
24	18 53 49.29	2.5297	S.27 18 52.9	1.457

SUNDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 53 49.29	2.5297	S.27 18 52.9	1.457
1	18 56 21.08	2.5299	27 17 20.3	1.629
2	18 58 52.88	2.5300	27 15 37.4	1.800
3	19 1 24.68	2.5300	27 13 44.2	1.972
4	19 3 56.48	2.5298	27 11 40.7	2.143
5	19 6 28.26	2.5295	27 9 26.9	2.315
6	19 9 0.02	2.5291	27 7 2.9	2.486
7	19 11 31.75	2.5285	27 4 28.6	2.658
8	19 14 3.44	2.5278	27 1 43.9	2.829
9	19 16 35.08	2.5269	26 58 49.0	2.999
10	19 19 6.67	2.5259	26 55 44.0	3.170
11	19 21 38.20	2.5248	26 52 28.7	3.340
12	19 24 9.65	2.5236	26 49 3.2	3.510
13	19 26 41.03	2.5223	26 45 27.5	3.680
14	19 29 12.32	2.5209	26 41 41.6	3.849
15	19 31 43.52	2.5193	26 37 45.6	4.018
16	19 34 14.63	2.5176	26 33 39.5	4.186
17	19 36 45.63	2.5157	26 29 23.3	4.354
18	19 39 16.51	2.5137	26 24 57.0	4.521
19	19 41 47.27	2.5117	26 20 20.7	4.688
20	19 44 17.91	2.5096	26 15 34.4	4.855
21	19 46 48.42	2.5073	26 10 38.1	5.021
22	19 49 18.78	2.5049	26 5 31.9	5.186
23	19 51 49.00	2.5024	S.26 0 15.8	5.350

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 54 19.07	2.4998	S.25 54 49.9	5.514
1	19 56 48.98	2.4971	25 49 14.1	5.677
2	19 59 18.72	2.4943	25 43 28.6	5.840
3	20 1 48.29	2.4914	25 37 33.3	6.002
4	20 4 17.69	2.4884	25 31 28.4	6.163
5	20 6 46.90	2.4853	25 25 13.8	6.323
6	20 9 15.92	2.4821	25 18 49.6	6.483
7	20 11 44.75	2.4788	25 12 15.8	6.642
8	20 14 13.38	2.4755	25 5 32.6	6.800
9	20 16 41.81	2.4721	24 58 39.9	6.956
10	20 19 10.03	2.4685	24 51 37.9	7.112
11	20 21 38.03	2.4649	24 44 26.5	7.267
12	20 24 5.82	2.4613	24 37 5.8	7.421
13	20 26 33.39	2.4576	24 29 35.9	7.575
14	20 29 0.73	2.4538	24 21 56.8	7.727
15	20 31 27.84	2.4499	24 14 8.6	7.878
16	20 33 54.72	2.4459	24 6 11 4	8 028
17	20 36 21.36	2.4419	23 58 5.2	8.178
18	20 38 47.75	2.4379	23 49 50.0	8.327
19	20 41 13.90	2.4338	23 41 25.9	8.474
20	20 43 39.81	2.4296	23 32 53.1	8.620
21	20 46 5.46	2.4254	23 24 11.5	8.765
22	20 48 30.86	2.4212	23 15 21.3	8.909
23	20 50 56.00	2.4169	23 6 22.5	9.052
24	20 53 20.89	2.4126	S.22 57 15.1	9.194

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 53 20.89	2.4126	S. 22 57 15.1	9.194
1	20 55 45.51	2.4082	22 47 59.2	9.334
2	20 58 9.87	2.4038	22 38 35.0	9.474
3	21 0 33.96	2.3993	22 29 2.4	9.612
4	21 2 57.78	2.3948	22 19 21.6	9.748
5	21 5 21.33	2.3903	22 9 32.7	9.883
6	21 7 44.62	2.3858	21 59 35.6	10.018
7	21 10 7.63	2.3812	21 49 30.5	10.152
8	21 12 30.36	2.3766	21 39 17.4	10.284
9	21 14 52.82	2.3720	21 28 56.4	10.414
10	21 17 15.00	2.3674	21 18 27.7	10.543
11	21 19 36.90	2.3628	21 7 51.2	10.672
12	21 21 58.53	2.3582	20 57 7.0	10.799
13	21 24 19.88	2.3535	20 46 15.2	10.925
14	21 26 40.95	2.3489	20 35 16.0	11.050
15	21 29 1.74	2.3442	20 24 9.3	11.173
16	21 31 22.25	2.3396	20 12 55.3	11.294
17	21 33 42.48	2.3349	20 1 34.0	11.414
18	21 36 2.44	2.3303	19 50 5.6	11.533
19	21 38 22.12	2.3257	19 38 30.1	11.651
20	21 40 41.52	2.3211	19 26 47.5	11.768
21	21 43 0.64	2.3164	19 14 57.9	11.883
22	21 45 19.49	2.3118	19 3 1.5	11.997
23	21 47 38.06	2.3072	S. 18 50 58.3	12.109

WEDNESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 49 56.35	2.3026	S. 18 38 48.4	12.220
1	21 52 14.37	2.2981	18 26 31.9	12.329
2	21 54 32.12	2.2935	18 14 8.9	12.438
3	21 56 49.60	2.2890	18 1 39.4	12.545
4	21 59 6.80	2.2845	17 49 3.5	12.650
5	22 1 23.74	2.2801	17 36 21.3	12.754
6	22 3 40.41	2.2757	17 23 33.0	12.857
7	22 5 56.82	2.2713	17 10 38.5	12.958
8	22 8 12.97	2.2670	16 57 38.0	13.058
9	22 10 28.86	2.2627	16 44 31.5	13.157
10	22 12 44.49	2.2584	16 31 19.2	13.254
11	22 14 59.86	2.2541	16 18 1.1	13.349
12	22 17 14.98	2.2499	16 4 37.3	13.443
13	22 19 29.85	2.2457	15 51 7.9	13.537
14	22 21 44.47	2.2416	15 37 32.9	13.629
15	22 23 58.85	2.2376	15 23 52.5	13.718
16	22 26 12.98	2.2336	15 10 6.8	13.806
17	22 28 26.87	2.2296	14 56 15.8	13.893
18	22 30 40.53	2.2257	14 42 19.6	13.979
19	22 32 53.95	2.2218	14 28 18.3	14.063
20	22 35 7.15	2.2180	14 14 12.0	14.146
21	22 37 20.12	2.2142	14 0 0.8	14.228
22	22 39 32.86	2.2105	13 45 44.7	14.308
23	22 41 45.38	2.2069	13 31 23.8	14.387
24	22 43 57.69	2.2033	S. 13 16 58.3	14.464

THURSDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 43 57.69	2.2033	S. 13 16 58.3	14.464
1	22 46 9.78	2.1998	13 2 28.2	14.539
2	22 48 21.67	2.1963	12 47 53.6	14.613
3	22 50 33.35	2.1929	12 33 14.6	14.687
4	22 52 44.82	2.1896	12 18 31.2	14.759
5	22 54 56.10	2.1863	12 3 43.6	14.828
6	22 57 7.18	2.1831	11 48 51.9	14.896
7	22 59 18.07	2.1799	11 33 56.1	14.963
8	23 1 28.77	2.1768	11 18 56.3	15.029
9	23 3 39.29	2.1738	11 3 52.6	15.093
10	23 5 49.63	2.1709	10 48 45.1	15.155
11	23 7 59.80	2.1680	10 33 33.9	15.217
12	23 10 9.79	2.1652	10 18 19.0	15.277
13	23 12 19.61	2.1624	10 3 0.6	15.335
14	23 14 29.28	2.1598	9 47 38.8	15.392
15	23 16 38.79	2.1572	9 32 13.6	15.448
16	23 18 48.14	2.1547	9 16 45.0	15.502
17	23 20 57.35	2.1523	9 1 13.2	15.555
18	23 23 6.41	2.1499	8 45 38.4	15.606
19	23 25 15.33	2.1476	8 30 0.5	15.656
20	23 27 24.12	2.1454	8 14 19.7	15.704
21	23 29 32.78	2.1432	7 58 36.0	15.751
22	23 31 41.31	2.1411	7 42 49.6	15.796
23	23 33 49.72	2.1392	S. 7 27 0.5	15.840

FRIDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 35 58.01	2.1374	S. 7 11 8.8	15.882
1	23 38 6.20	2.1356	6 55 14.6	15.923
2	23 40 14.28	2.1339	6 39 18.0	15.963
3	23 42 22.26	2.1322	6 23 19.1	16.001
4	23 44 30.14	2.1306	6 7 17.9	16.038
5	23 46 37.93	2.1291	5 51 14.5	16.073
6	23 48 45.63	2.1277	5 35 9.1	16.107
7	23 50 53.25	2.1263	5 19 1.7	16.139
8	23 53 0.79	2.1250	5 2 52.4	16.170
9	23 55 8.26	2.1239	4 46 41.3	16.199
10	23 57 15.66	2.1229	4 30 28.5	16.227
11	23 59 23.00	2.1219	4 14 14.0	16.254
12	0 1 30.29	2.1210	3 57 58.0	16.279
13	0 3 37.52	2.1201	3 41 40.5	16.302
14	0 5 44.70	2.1194	3 25 21.7	16.324
15	0 7 51.84	2.1187	3 9 1.6	16.344
16	0 9 58.94	2.1181	2 52 40.4	16.363
17	0 12 6.01	2.1176	2 36 18.1	16.381
18	0 14 13.05	2.1172	2 19 54.7	16.397
19	0 16 20.07	2.1168	2 3 30.4	16.412
20	0 18 27.07	2.1166	1 47 5.3	16.425
21	0 20 34.06	2.1164	1 30 39.5	16.436
22	0 22 41.04	2.1163	1 14 13.0	16.446
23	0 24 48.02	2.1163	0 57 45.9	16.455
24	0 26 54.99	2.1164	S. 0 41 18.4	16.462

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 29.					SUNDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 26 54.99	2.1164	S. 0 41 18.4	16.462	0	1 17 56.23	2.1433	N. 5 52 5.6	16.173
1	0 29 1.97	2.1165	0 24 50.5	16.467	1	1 20 4.89	2.1454	6 8 15.1	16.142
2	0 31 8.97	2.1168	S. 0 8 22.3	16.471	2	1 22 13.68	2.1476	6 24 22.6	16.109
3	0 33 15.99	2.1171	N. 0 8 6.1	16.473	3	1 24 22.60	2.1498	6 40 28.1	16.074
4	0 35 23.02	2.1175	0 24 34.5	16.474	4	1 26 31.66	2.1522	6 56 31.5	16.038
5	0 37 30.08	2.1180	0 41 3.0	16.474	5	1 28 40.87	2.1547	7 12 32.7	16.000
6	0 39 37.18	2.1186	0 57 31.4	16.472	6	1 30 50.22	2.1572	7 28 31.5	15.959
7	0 41 44.31	2.1192	1 13 59.7	16.469	7	1 32 59.72	2.1597	7 44 27.9	15.919
8	0 43 51.49	2.1199	1 30 27.7	16.464	8	1 35 9.38	2.1623	8 0 21.8	15.877
9	0 45 58.71	2.1208	1 46 55.4	16.457	9	1 37 19.20	2.1650	8 16 13.1	15.833
10	0 48 5.99	2.1218	2 3 22.6	16.449	10	1 39 29.18	2.1678	8 32 1.8	15.787
11	0 50 13.33	2.1228	2 19 49.3	16.439	11	1 41 39.33	2.1707	8 47 47.7	15.740
12	0 52 20.73	2.1239	2 36 15.3	16.428	12	1 43 49.66	2.1736	9 3 30.6	15.691
13	0 54 28.20	2.1251	2 52 40.6	16.416	13	1 46 0.16	2.1765	9 19 10.5	15.640
14	0 56 35.74	2.1264	3 9 5.2	16.402	14	1 48 10.84	2.1795	9 34 47.4	15.588
15	0 58 43.36	2.1277	3 25 28.9	16.386	15	1 50 21.71	2.1827	9 50 21.1	15.534
16	1 0 51.06	2.1291	3 41 51.5	16.368	16	1 52 32.77	2.1859	10 5 51.5	15.479
17	1 2 58.85	2.1306	3 58 13.0	16.349	17	1 54 44.02	2.1892	10 21 18.5	15.422
18	1 5 6.73	2.1322	4 14 33.4	16.329	18	1 56 55.47	2.1925	10 36 42.1	15.363
19	1 7 14.71	2.1338	4 30 52.5	16.307	19	1 59 7.12	2.1958	10 52 2.1	15.303
20	1 9 22.79	2.1355	4 47 10.2	16.283	20	2 1 18.97	2.1992	11 7 18.4	15.241
21	1 11 30.98	2.1374	5 3 26.5	16.258	21	2 3 31.03	2.2027	11 22 31.0	15.178
22	1 13 39.28	2.1393	5 19 41.2	16.231	22	2 5 43.29	2.2062	11 37 39.7	15.112
23	1 15 47.70	2.1413	5 35 54.3	16.203	23	2 7 55.77	2.2098	11 52 44.4	15.045
24	1 17 56.23	2.1433	N. 5 52 5.6	16.173	24	2 10 8.47	2.2135	N. 12 7 45.1	14.976

PHASES OF THE MOON.

	d	h	m
○ Full Moon, ...	4	3	48.5
☾ Last Quarter, ...	11	12	48.1
● New Moon, ...	19	15	36.6
☽ First Quarter, ...	26	20	13.0

	d	h
☾ Perigee, ...	2	1.3
☾ Apogee, ...	13	20.6
☾ Perigee, ...	29	15.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Antares	W.	107° 25′ 50″	2126	109° 16′ 10″	2122	111° 6′ 36″	2117	112° 57′ 9″	2113
	Mars	W.	72 6 56	2352	73 51 40	2346	75 36 32	2342	77 21 30	2338
	α Aquilæ	W.	63 0 10	3220	64 25 55	3182	65 52 26	3147	67 19 39	3116
	Saturn	W.	58 58 0	2156	60 47 34	2150	62 37 17	2145	64 27 7	2141
	α Arietis	E.	42 15 24	2302	40 29 27	2311	38 43 43	2322	36 58 17	2339
	Aldebaran	E.	71 53 47	2164	70 4 25	2160	68 14 57	2157	66 25 24	2154
	Pollux	E.	115 52 35	2124	114 2 13	2120	112 11 44	2115	110 21 8	2111
2	Mars	W.	86 7 33	2326	87 52 54	2326	89 38 15	2326	91 23 36	2327
	α Aquilæ	W.	74 44 4	3002	76 14 14	2987	77 44 43	2974	79 15 28	2965
	Saturn	W.	73 37 38	2128	75 27 54	2128	77 18 11	2128	79 8 28	2128
	Fomalhaut	W.	41 38 3	2497	43 19 20	2470	45 1 16	2446	46 43 45	2426
	Aldebaran	E.	57 17 0	2152	55 27 20	2154	53 37 43	2157	51 48 10	2161
	Pollux	E.	101 6 52	2099	99 15 52	2099	97 24 52	2099	95 33 52	2099
3	Mars	W.	100 9 46	2341	101 54 46	2345	103 39 40	2350	105 24 26	2357
	Saturn	W.	88 19 23	2141	90 9 20	2145	91 59 11	2150	93 48 54	2155
	α Aquilæ	W.	86 51 24	2947	88 22 43	2950	89 53 59	2954	91 25 9	2962
	Fomalhaut	W.	55 21 59	2365	57 6 24	2359	58 50 58	2355	60 35 38	2352
	α Pegasi	W.	39 15 2	3180	40 41 35	3107	42 9 36	3043	43 38 55	2988
	Aldebaran	E.	42 42 22	2195	40 53 47	2206	39 5 29	2219	37 17 30	2234
	Pollux	E.	86 19 23	2113	84 28 43	2116	82 38 9	2122	80 47 43	2127
4	Saturn	W.	102 55 2	2193	104 43 40	2203	106 32 3	2213	108 20 11	2224
	α Aquilæ	W.	98 57 55	3026	100 27 35	3047	101 56 50	3069	103 25 38	3091
	Fomalhaut	W.	69 19 18	2359	71 3 52	2363	72 48 20	2368	74 32 40	2376
	α Pegasi	W.	51 20 1	2808	52 54 19	2788	54 29 3	2770	56 4 10	2754
	Pollux	E.	71 37 58	2165	69 48 37	2173	67 59 29	2183	66 10 36	2194
	Regulus	E.	108 2 47	2178	106 13 46	2186	104 24 58	2196	102 36 25	2206
5	Fomalhaut	W.	83 11 20	2424	84 54 20	2437	86 37 2	2450	88 19 26	2463
	α Pegasi	W.	64 3 23	2722	65 39 33	2722	67 15 43	2725	68 51 50	2728
	Pollux	E.	57 10 19	2253	55 23 10	2266	53 36 21	2280	51 49 52	2294
	Regulus	E.	93 37 37	2264	91 50 45	2277	90 4 12	2291	88 17 59	2305
	Jupiter	E.	120 12 34	2311	118 26 51	2324	116 41 26	2337	114 56 21	2351
6	Fomalhaut	W.	96 46 18	2542	98 26 33	2560	100 6 23	2578	101 45 48	2597
	α Pegasi	W.	76 50 40	2766	78 25 53	2777	80 0 51	2789	81 35 33	2802
	α Arietis	W.	33 20 44	2618	34 59 14	2615	36 37 48	2614	38 16 24	2614
	Pollux	E.	43 2 50	2371	41 18 34	2387	39 34 41	2404	37 51 12	2421
	Regulus	E.	79 32 15	2381	77 48 13	2398	76 4 35	2414	74 21 20	2431
	Jupiter	E.	106 16 9	2427	104 33 13	2443	102 50 39	2460	101 8 29	2476
7	α Pegasi	W.	89 24 27	2880	90 57 11	2898	92 20 33	2916	94 1 32	2935
	α Arietis	W.	46 28 21	2645	48 6 15	2655	49 43 56	2666	51 21 22	2678
	Regulus	E.	65 51 9	2518	64 10 21	2536	62 29 58	2554	60 50 0	2572
	Jupiter	E.	92 43 31	2561	91 3 43	2580	89 24 20	2597	87 45 21	2614
	Venus	E.	116 58 32	2917	115 26 35	2937	113 55 3	2957	112 23 56	2977
8	α Pegasi	W.	101 35 9	3039	103 4 33	3061	104 33 30	3085	106 1 58	3109
	α Arietis	W.	59 24 25	2742	61 0 9	2756	62 35 34	2771	64 10 40	2785
	Aldebaran	W.	29 5 34	2795	30 40 9	2798	32 14 39	2803	33 49 3	2810
	Regulus	E.	52 36 21	2663	50 58 52	2681	49 21 47	2700	47 45 7	2718
	Jupiter	E.	79 36 23	2702	77 59 46	2720	76 23 33	2738	74 47 43	2734
	Venus	E.	104 54 22	3072	103 25 38	3091	101 57 17	3110	100 29 19	3129

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Antares	W.	114° 47′ 48″	2110	116° 38′ 32″	2108	118° 29′ 19″	2105	120° 20′ 10″	2103
	Mars	W.	79 6 34	2335	80 51 43	2331	82 36 57	2329	84 22 14	2328
	α Aquilæ	W.	68 47 29	3087	70 15 54	3061	71 44 51	3039	73 14 15	3019
	Saturn	W.	66 17 4	2137	68 7 6	2134	69 57 13	2132	71 47 24	2130
	α Arietis	E.	35 13 14	2357	33 28 38	2380	31 44 35	2408	30 1 11	2441
	Aldebaran	E.	64 35 47	2152	62 46 7	2151	60 56 25	2150	59 6 42	2151
	Pollux	E.	108 30 25	2107	106 39 37	2105	104 48 45	2103	102 57 50	2101
2	Mars	W.	93 8 56	2328	94 54 14	2331	96 39 29	2333	98 24 40	2337
	α Aquilæ	W.	80 46 25	2957	82 17 32	2951	83 48 46	2948	85 20 4	2946
	Saturn	W.	80 58 45	2129	82 49 0	2131	84 39 12	2134	86 29 20	2137
	Fomalhaut	W.	48 26 42	2409	50 10 4	2395	51 53 46	2383	53 37 45	2373
	Aldebaran	E.	49 58 43	2165	48 9 23	2171	46 20 12	2178	44 31 11	2186
	Pollux	E.	93 42 52	2101	91 51 54	2103	90 1 0	2105	88 10 9	2109
3	Mars	W.	107 9 2	2364	108 53 29	2371	110 37 45	2379	112 21 50	2387
	Saturn	W.	95 38 29	2162	97 27 54	2169	99 17 8	2176	101 6 11	2184
	α Aquilæ	W.	92 56 10	2970	94 27 0	2982	95 57 35	2995	97 27 54	3009
	Fomalhaut	W.	62 20 22	2350	64 5 8	2350	65 49 54	2352	67 34 38	2355
	α Pegasi	W.	45 9 23	2940	46 40 51	2899	48 13 11	2864	49 46 16	2833
	Aldebaran	E.	35 29 53	2250	33 42 40	2269	31 55 55	2290	30 9 41	2315
	Pollux	E.	78 57 25	2134	77 7 17	2140	75 17 19	2147	73 27 32	2156
4	Saturn	W.	110 8 3	2235	111 55 39	2247	113 42 57	2259	115 29 57	2272
	α Aquilæ	W.	104 53 58	3118	106 21 46	3147	107 48 59	3178	109 15 35	3211
	Fomalhaut	W.	76 16 49	2384	78 0 47	2392	79 44 33	2403	81 28 4	2413
	α Pegasi	W.	57 39 38	2743	59 15 21	2735	60 51 14	2729	62 27 15	2724
	Pollux	E.	64 21 59	2204	62 33 38	2216	60 45 34	2227	58 57 47	2240
	Regulus	E.	100 48 6	2216	99 0 3	2228	97 12 17	2239	95 24 48	2251
5	Fomalhaut	W.	90 1 31	2477	91 43 16	2493	93 24 39	2509	95 5 40	2525
	α Pegasi	W.	70 27 53	2733	72 3 49	2739	73 39 37	2747	75 15 14	2756
	Pollux	E.	50 3 44	2309	48 17 57	2324	46 32 32	2339	44 47 30	2355
	Regulus	E.	86 32 7	2320	84 46 36	2335	83 1 27	2350	81 16 40	2365
	Jupiter	E.	113 11 36	2366	111 27 12	2380	109 43 9	2396	107 59 28	2411
6	Fomalhaut	W.	103 24 47	2616	105 3 20	2636	106 41 26	2657	108 19 4	2678
	α Pegasi	W.	83 9 58	2816	84 44 5	2831	86 17 53	2846	87 51 21	2863
	α Arietis	W.	39 55 0	2617	41 33 32	2622	43 11 57	2628	44 50 14	2635
	Pollux	E.	36 8 7	2438	34 25 26	2456	32 43 11	2474	31 1 21	2492
	Regulus	E.	72 38 29	2448	70 56 2	2465	69 14 0	2482	67 32 22	2500
	Jupiter	E.	99 26 42	2493	97 45 19	2510	96 4 19	2527	94 23 43	2544
7	α Pegasi	W.	95 33 6	2955	97 4 16	2975	98 35 0	2996	100 5 18	3018
	α Arietis	W.	52 58 32	2689	54 35 26	2702	56 12 3	2715	57 48 23	2729
	Regulus	E.	59 10 26	2590	57 31 17	2609	55 52 34	2626	54 14 15	2645
	Jupiter	E.	86 6 45	2632	84 28 33	2650	82 50 46	2668	81 13 23	2685
	Venus	E.	110 53 14	2996	109 22 56	3014	107 53 1	3034	106 23 30	3052
8	α Pegasi	W.	107 29 57	3133	108 57 27	3158	110 24 27	3183	111 50 56	3209
	α Arietis	W.	65 45 28	2799	67 19 57	2814	68 54 7	2828	70 27 59	2842
	Aldebaran	W.	35 23 18	2818	36 57 23	2825	38 31 18	2835	40 5 0	2845
	Regulus	E.	46 8 51	2737	44 33 0	2754	42 57 32	2772	41 22 28	2792
	Jupiter	E.	73 12 15	2772	71 37 10	2788	70 2 26	2805	68 28 4	2821
	Venus	E.	99 1 44	3147	97 34 31	3165	96 7 40	3183	94 41 11	3201

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Spica	E.	106° 38′ 1″	2652	105° 0′ 17″	2669	103° 22′ 55″	2685	101° 45′ 55′	2702
	Sun	E.	130 31 33	2985	129 1 2	3004	127 30 54	3022	126 1 9	3042
9	α Arietis	W.	72 1 32	2856	73 34 47	2871	75 7 43	2885	76 40 21	2899
	Aldebaran	W.	41 38 29	2856	43 11 44	2866	44 44 46	2877	46 17 34	2889
	Regulus	E.	39 47 49	2810	38 13 34	2828	36 39 42	2845	35 6 13	2864
	Jupiter	E.	66 54 4	2837	65 20 24	2853	63 47 5	2869	62 14 6	2884
	Venus	E.	93 15 3	3219	91 49 16	3236	90 23 50	3253	88 58 44	3269
	Spica	E.	93 46 28	2784	92 11 39	2798	90 37 9	2814	89 2 59	2829
	Sun	E.	118 38 0	3129	117 10 26	3147	115 43 13	3163	114 16 20	3179
10	α Arietis	W.	84 19 10	2965	85 50 6	2978	87 20 46	2990	88 51 11	3002
	Aldebaran	W.	53 57 56	2945	55 29 18	2955	57 0 27	2966	58 31 22	2977
	Jupiter	E.	54 33 57	2956	53 2 49	2969	51 31 57	2982	50 1 22	2995
	Spica	E.	81 16 55	2900	79 44 36	2912	78 12 33	2925	76 40 46	2937
	Venus	E.	81 57 54	3348	80 34 38	3362	79 11 38	3376	77 48 54	3389
	Sun	E.	107 6 38	3256	105 41 35	3270	104 16 48	3283	102 52 17	3296
11	α Arietis	W.	96 19 39	3057	97 48 41	3068	99 17 30	3078	100 46 7	3087
	Aldebaran	W.	66 2 50	3024	67 32 33	3033	69 2 5	3041	70 31 27	3048
	Pollux	W.	21 44 26	2995	23 14 45	3002	24 44 55	3009	26 14 56	3018
	Jupiter	E.	42 32 13	3052	41 3 4	3062	39 34 8	3072	38 5 24	3082
	Spica	E.	69 5 32	2993	67 35 10	3002	66 5 0	3012	64 35 2	3020
	Venus	E.	70 58 52	3449	69 37 31	3460	68 16 22	3471	66 55 25	3480
	Sun	E.	95 53 22	3356	94 30 15	3365	93 7 19	3376	91 44 35	3386
12	Aldebaran	W.	77 56 5	3082	79 24 37	3087	80 53 3	3091	82 21 23	3096
	Pollux	W.	33 42 49	3049	35 12 1	3054	36 41 7	3059	38 10 7	3063
	Jupiter	E.	30 44 31	3124	29 16 51	3132	27 49 20	3139	26 21 58	3147
	Spica	E.	57 7 43	3058	55 38 42	3065	54 9 49	3070	52 41 3	3075
	Venus	E.	60 13 6	3519	58 53 3	3526	57 33 8	3532	56 13 19	3537
	Sun	E.	84 53 24	3424	83 31 35	3431	82 9 53	3436	80 48 17	3441
13	Aldebaran	W.	89 41 54	3112	91 9 49	3113	92 37 43	3114	94 5 35	3115
	Pollux	W.	45 33 58	3078	47 2 35	3080	48 31 9	3081	49 59 42	3082
	Spica	E.	45 18 40	3096	43 50 26	3100	42 22 16	3102	40 54 9	3105
	Venus	E.	49 35 28	3555	48 16 5	3557	46 56 44	3558	45 37 24	3560
	Sun	E.	74 1 34	3459	72 40 24	3462	71 19 17	3463	69 58 12	3463
14	Aldebaran	W.	101 24 46	3115	102 52 37	3113	104 20 31	3111	105 48 27	3110
	Pollux	W.	57 22 25	3078	58 51 1	3076	60 19 40	3074	61 48 21	3071
	Regulus	W.	21 21 59	3180	22 48 32	3167	24 15 21	3154	25 42 25	3143
	Spica	E.	33 34 12	3113	32 6 18	3114	30 38 26	3116	29 10 36	3118
	Venus	E.	39 0 53	3557	37 41 32	3555	36 22 8	3553	35 2 42	3550
	Sun	E.	63 12 49	3462	61 51 42	3459	60 30 32	3456	59 9 19	3454
15	Pollux	W.	69 12 48	3052	70 41 56	3047	72 11 11	3041	73 40 33	3036
	Regulus	W.	33 0 49	3097	34 29 2	3088	35 57 26	3080	37 26 0	3072
	Sun	E.	52 22 22	3434	51 0 44	3429	49 39 0	3423	48 17 9	3416
16	Pollux	W.	81 9 12	3003	82 39 21	2996	84 9 39	2988	85 40 7	2980
	Regulus	W.	44 51 24	3030	46 21 1	3021	47 50 48	3012	49 20 48	3002
	Sun	E.	41 26 3	3381	40 3 25	3374	38 40 39	3365	37 17 43	3357
17	Pollux	W.	93 15 2	2938	94 46 33	2928	96 18 16	2919	97 50 11	2910

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Spica	E.	100 9 18	2719	98 33 3	2735	96 57 10	2751	95 21 38	2768
	Sun	E.	124 31 48	3060	123 2 49	3077	121 34 11	3095	120 5 55	3112
9	α Arietis	W.	78 12 41	2918	79 44 44	2927	81 16 29	2939	82 47 58	2953
	Aldebaran	W.	47 50 7	2900	49 22 26	2912	50 54 30	2923	52 26 20	2934
	Regulus	E.	33 33 8	2883	32 0 27	2901	30 28 10	2921	28 56 18	2941
	Jupiter	E.	60 41 27	2899	59 9 7	2913	57 37 5	2928	56 5 22	2942
	Venus	E.	87 33 56	3285	86 9 27	3302	84 45 18	3318	83 21 27	3333
	Spica	E.	87 29 9	2844	85 55 38	2859	84 22 26	2873	82 49 32	2886
	Sun	E.	112 49 46	3196	111 23 32	3211	109 57 36	3226	108 31 58	3242
10	α Arietis	W.	90 21 21	3014	91 51 16	3026	93 20 57	3037	94 50 24	3047
	Aldebaran	W.	60 2 4	2986	61 32 34	2997	63 2 51	3006	64 32 56	3015
	Jupiter	E.	48 31 3	3007	47 0 59	3019	45 31 10	3030	44 1 35	3041
	Spica	E.	75 9 14	2949	73 37 57	2961	72 6 55	2972	70 36 7	2982
	Venus	E.	76 26 25	3402	75 4 11	3415	73 42 11	3427	72 20 25	3438
	Sun	E.	101 28 1	3309	100 4 0	3322	98 40 14	3334	97 16 42	3345
11	α Arietis	W.	102 14 33	3096	103 42 48	3105	105 10 52	3113	106 38 46	3120
	Aldebaran	W.	72 0 40	3056	73 29 44	3063	74 58 39	3069	76 27 26	3076
	Pollux	W.	27 44 47	3024	29 14 30	3031	30 44 4	3038	32 13 30	3043
	Jupiter	E.	36 36 52	3091	35 8 31	3100	33 40 21	3108	32 12 21	3116
	Spica	E.	63 5 14	3029	61 35 37	3037	60 6 10	3044	58 36 52	3052
	Venus	E.	65 34 38	3488	64 14 1	3497	62 53 34	3506	61 33 16	3513
	Sun	E.	90 22 2	3394	88 59 39	3402	87 37 25	3410	86 15 20	3418
12	Aldebaran	W.	83 49 38	3100	85 17 48	3103	86 45 54	3106	88 13 56	3110
	Pollux	W.	39 39 2	3067	41 7 52	3071	42 36 37	3073	44 5 19	3076
	Jupiter	E.	24 54 45	3154	23 27 41	3163	22 0 47	3170	20 34 2	3179
	Spica	E.	51 12 23	3080	49 43 49	3085	48 15 21	3089	46 46 58	3093
	Venus	E.	54 53 36	3541	53 33 57	3545	52 14 23	3550	50 54 54	3553
	Sun	E.	79 26 47	3446	78 5 22	3450	76 44 2	3454	75 22 47	3456
13	Aldebaran	W.	95 33 26	3116	97 1 16	3116	98 29 6	3116	99 56 56	3116
	Pollux	W.	51 28 14	3083	52 56 46	3082	54 25 18	3081	55 53 51	3080
	Spica	E.	39 26 5	3107	37 58 4	3109	36 30 5	3110	35 2 8	3111
	Venus	E.	44 18 6	3561	42 58 49	3560	41 39 31	3559	40 20 12	3559
	Sun	E.	68 37 7	3464	67 16 3	3464	65 54 59	3463	64 33 54	3463
14	Aldebaran	W.	107 16 25	3107	108 44 26	3105	110 12 30	3101	111 40 38	3098
	Pollux	W.	63 17 6	3068	64 45 55	3065	66 14 48	3060	67 43 46	3057
	Regulus	W.	27 9 42	3133	28 37 11	3123	30 4 53	3114	31 32 46	3105
	Spica	E.	27 42 48	3120	26 15 3	3122	24 47 20	3125	23 19 41	3131
	Venus	E.	33 43 13	3546	32 23 40	3543	31 4 3	3538	29 44 21	3535
	Sun	E.	57 48 4	3451	56 26 45	3447	55 5 22	3443	53 43 54	3439
15	Pollux	W.	75 10 1	3030	76 39 36	3023	78 9 20	3017	79 39 12	3010
	Regulus	W.	38 54 44	3064	40 23 38	3055	41 52 43	3047	43 21 58	3038
	Sun	E.	46 55 11	3410	45 33 6	3403	44 10 53	3396	42 48 32	3389
16	Pollux	W.	87 10 45	2972	88 41 33	2963	90 12 32	2954	91 43 42	2946
	Regulus	W.	50 50 56	2993	52 21 17	2984	53 51 50	2974	55 22 35	2965
	Sun	E.	35 54 37	3348	34 31 21	3339	33 7 55	3331	31 44 19	3321
17	Pollux	W.	99 22 17	2901	100 54 35	2891	102 27 6	2880	103 59 50	2871

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Regulus	W.	56° 53′ 31″	2955	58° 24′ 40″	2946	59° 56′ 1″	2936	61° 27′ 34″	2926
	Sun	E.	30 20 32	3319	28 56 34	3302	27 32 25	3293	26 8 5	3283
22	Sun	W.	28 27 22	2902	29 59 38	2894	31 32 5	2884	33 4 44	2876
	Fomalhaut	E.	64 2 15	2776	62 27 16	2775	60 52 15	2775	59 17 14	2775
	α Pegasi	E.	84 47 30	2940	83 16 2	2935	81 44 27	2930	80 12 46	2926
23	Sun	W.	40 50 40	2835	42 24 22	2827	43 58 15	2819	45 32 18	2812
	Fomalhaut	E.	51 22 48	2795	49 48 13	2803	48 13 49	2813	46 39 38	2825
	α Pegasi	E.	72 33 29	2920	71 1 35	2922	69 29 44	2924	67 57 56	2927
	α Arietis	E.	114 18 39	2587	112 39 26	2578	111 0 1	2569	109 20 23	2561
24	Sun	W.	53 24 55	2776	54 59 54	2769	56 35 3	2762	58 10 21	2756
	α Pegasi	E.	60 20 39	2967	58 49 45	2981	57 19 8	2996	55 48 50	3013
	α Arietis	E.	100 59 22	2521	99 18 38	2513	97 37 43	2506	95 56 38	2499
25	Sun	W.	66 9 0	2722	67 45 10	2716	69 21 28	2710	70 57 55	2704
	α Pegasi	E.	48 23 48	3144	46 56 32	3183	45 30 2	3225	44 4 23	3275
	α Arietis	E.	87 28 59	2469	85 47 2	2463	84 4 57	2458	82 22 45	2453
	Aldebaran	E.	117 48 8	2440	116 5 30	2432	114 22 41	2424	112 39 41	2418
26	Sun	W.	79 2 10	2674	80 39 25	2668	82 16 48	2662	83 54 19	2657
	Saturn	W.	25 5 35	2448	26 48 2	2434	28 30 48	2422	30 13 52	2410
	Mars	W.	21 5 57	2654	22 43 39	2641	24 21 38	2629	25 59 54	2617
	α Arietis	E.	73 50 0	2431	72 7 9	2426	70 24 12	2423	68 41 10	2420
	Aldebaran	E.	104 2 22	2386	102 18 27	2380	100 34 24	2375	98 50 13	2368
27	Sun	W.	92 3 42	2630	93 41 56	2625	95 20 17	2620	96 58 45	2615
	α Aquilæ	W.	49 34 54	3995	50 46 39	3905	51 59 54	3823	53 14 32	3748
	Saturn	W.	38 52 48	2366	40 37 11	2359	42 21 44	2353	44 6 26	2346
	Mars	W.	34 14 38	2574	35 54 8	2567	37 33 48	2561	39 13 37	2554
	α Arietis	E.	60 5 5	2410	58 21 44	2409	56 38 22	2409	54 55 0	2410
	Aldebaran	E.	90 7 18	2343	88 22 21	2338	86 37 17	2334	84 52 7	2329
28	Sun	W.	105 12 36	2594	106 51 39	2590	108 30 48	2586	110 10 2	2583
	α Aquilæ	W.	59 45 24	3459	61 6 34	3415	62 28 33	3375	63 51 18	3337
	Saturn	W.	52 52 9	2319	54 37 41	2315	56 23 19	2311	58 9 3	2307
	Mars	W.	47 34 44	2527	49 15 19	2522	50 56 1	2518	52 36 49	2515
	α Arietis	E.	46 18 44	2425	44 35 45	2431	42 52 54	2438	41 10 14	2448
	Aldebaran	E.	76 4 48	2311	74 19 5	2308	72 33 17	2305	70 47 25	2303
29	Sun	W.	118 27 17	2569	120 6 54	2566	121 46 35	2565	123 26 18	2564
	α Aquilæ	W.	70 54 42	3195	72 20 57	3175	73 47 36	3157	75 14 37	3139
	Saturn	W.	66 59 5	2290	68 45 19	2288	70 31 36	2285	72 17 57	2284
	Mars	W.	61 2 7	2498	62 43 23	2495	64 24 43	2493	66 6 6	2492
	Fomalhaut	W.	37 23 55	2735	38 59 49	2697	40 36 33	2663	42 14 3	2632
	Aldebaran	E.	61 57 22	2296	60 11 16	2296	58 25 11	2296	56 39 6	2297
	Pollux	E.	105 50 9	2249	104 2 55	2247	102 15 38	2245	100 28 18	2244
30	α Aquilæ	W.	82 33 59	3085	84 2 27	3081	85 31 0	3078	86 59 37	3074
	Saturn	W.	81 10 10	2280	82 56 39	2280	84 43 8	2281	86 29 36	2281
	Mars	W.	74 33 30	2487	76 15 2	2487	77 56 33	2488	79 38 3	2489
	Fomalhaut	W.	50 30 8	2531	52 10 38	2517	53 51 27	2505	55 32 33	2493
	Aldebaran	E.	47 49 10	2309	46 3 24	2313	44 17 44	2319	42 32 12	2326
	Pollux	E.	91 31 12	2241	89 43 45	2241	87 56 18	2241	86 8 52	2242

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Regulus	W.	62° 59′ 20″	2916	64° 31′ 18″	2906	66° 3′ 29″	2896	67° 35′ 53″	2885
	Sun	E.	24 43 34	3274	23 18 52	3264	21 53 58	3253	20 28 52	3244
22	Sun	W.	34 37 34	2867	36 10 35	2859	37 43 46	2851	39 17 8	2843
	Fomalhaut	E.	57 42 14	2777	56 7 16	2779	54 32 21	2783	52 57 31	2788
	α Pegasi	E.	78 41 0	2923	77 9 10	2921	75 37 18	2920	74 5 24	2919
23	Sun	W.	47 6 30	2805	48 40 52	2797	50 15 24	2790	51 50 5	2783
	Fomalhaut	E.	45 5 43	2840	43 32 7	2857	41 58 58	2877	40 26 5	2902
	α Pegasi	E.	66 26 12	2933	64 54 35	2939	63 23 6	2947	61 51 47	2956
	α Arietis	E.	107 40 34	2552	106 0 33	2543	104 20 20	2535	102 39 56	2528
24	Sun	W.	59 45 47	2749	61 21 22	2742	62 57 6	2735	64 32 59	2729
	α Pegasi	E.	54 18 53	3033	52 49 21	3056	51 20 17	3082	49 51 45	3110
	α Arietis	E.	94 15 24	2493	92 34 1	2487	90 52 29	2480	89 10 48	2475
25	Sun	W.	72 34 30	2698	74 11 13	2692	75 48 4	2686	77 25 3	2680
	α Pegasi	E.	42 39 42	3331	41 16 6	3395	39 53 44	3469	38 32 45	3551
	α Arietis	E.	80 40 25	2448	78 57 58	2443	77 15 25	2438	75 32 45	2435
	Aldebaran	E.	110 56 32	2411	109 13 13	2405	107 29 45	2398	105 46 8	2392
26	Sun	W.	85 31 57	2652	87 9 42	2646	88 47 35	2640	90 25 35	2635
	Saturn	W.	31 57 13	2400	33 40 48	2391	35 24 36	2382	37 8 36	2374
	Mars	W.	27 38 26	2607	29 17 12	2599	30 56 9	2590	32 35 18	2582
	α Arietis	E.	66 58 4	2417	65 14 54	2415	63 31 41	2412	61 48 24	2411
	Aldebaran	E.	97 5 53	2363	95 21 25	2358	93 36 50	2353	91 52 8	2348
27	Sun	W.	98 37 19	2611	100 15 59	2606	101 54 46	2602	103 33 38	2598
	α Aquilæ	W.	54 30 28	3680	55 47 36	3618	57 5 51	3561	58 25 8	3507
	Saturn	W.	45 51 18	2340	47 36 19	2335	49 21 28	2329	51 6 45	2324
	Mars	W.	40 53 35	2548	42 33 41	2543	44 13 55	2538	45 54 16	2533
	α Arietis	E.	53 11 39	2411	51 28 20	2412	49 45 3	2415	48 1 50	2420
	Aldebaran	E.	83 6 50	2326	81 21 28	2322	79 36 0	2316	77 50 27	2314
28	Sun	W.	111 49 21	2580	113 28 44	2576	115 8 12	2574	116 47 43	2572
	α Aquilæ	W.	65 14 47	3363	66 38 55	3273	68 3 38	2245	69 28 54	3218
	Saturn	W.	59 54 53	2302	61 40 49	2299	63 26 50	2296	65 12 55	2293
	Mars	W.	54 17 42	2510	55 58 41	2507	57 39 45	2503	59 20 54	2500
	α Arietis	E.	39 27 47	2460	37 45 37	2473	36 3 46	2489	34 22 18	2510
	Aldebaran	E.	69 1 30	2300	67 15 31	2299	65 29 30	2298	63 43 27	2296
29	Sun	W.	125 6 2	2563	126 45 48	2563	128 25 34	2562	130 5 21	2561
	α Aquilæ	W.	76 41 59	3124	78 9 39	3113	79 37 33	3102	81 5 40	3092
	Saturn	W.	74 4 20	2283	75 50 45	2281	77 37 12	2280	79 23 41	2290
	Mars	W.	67 47 31	2489	69 28 59	2489	71 10 28	2488	72 51 58	2487
	Fomalhaut	W.	43 52 14	2607	45 31 0	2585	47 10 16	2565	48 49 59	2546
	Aldebaran	E.	54 53 2	2298	53 6 59	2300	51 20 59	2302	49 35 2	2305
	Pollux	E.	98 40 56	2243	96 53 32	2241	95 6 6	2241	93 18 39	2241
30	α Aquilæ	W.	88 28 18	3074	89 56 59	3077	91 25 37	3080	92 54 11	3085
	Saturn	W.	88 16 3	2283	90 2 28	2285	91 48 50	2287	93 35 9	2289
	Mars	W.	81 19 32	2490	83 0 59	2492	84 42 23	2494	86 23 45	2497
	Fomalhaut	W.	57 13 53	2487	58 55 25	2479	60 37 8	2473	62 18 59	2469
	Aldebaran	E.	40 46 51	2334	39 1 41	2343	37 16 44	2353	35 32 2	2363
	Pollux	E.	84 21 27	2244	82 34 5	2245	80 46 45	2247	78 59 28	2250

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Merid-ian.	Equation of Time, *to be subtracted from* *added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	16 30 57.30	10.806	S. 21 52 46.9	22.91	16 16.06	70.33	10 39.62	0.948
Tues.	2	16 35 16.97	10.833	22 1 44.8	21.85	16 16.22	70.41	10 16.57	0.974
Wed.	3	16 39 37.26	10.858	22 10 17.3	20.79	16 16.36	70.49	9 52.91	0.999
Thur.	4	16 43 58.13	10.882	22 18 24.0	19.71	16 16.50	70.57	9 28.66	1.023
Frid.	5	16 48 19.57	10.905	22 26 4.7	18.62	16 16.63	70.65	9 3.84	1.046
Sat.	6	16 52 41.55	10.927	22 33 19.2	17.53	16 16.76	70.72	8 38.49	1.068
Sun.	7	16 57 4.06	10.948	22 40 7.2	16.43	16 16.88	70.79	8 12.61	1.089
Mon.	8	17 1 27.06	10.968	22 46 28.7	15.31	16 16.99	70.85	7 46.25	1.109
Tues.	9	17 5 50.52	10.987	22 52 23.3	14.19	16 17.10	70.91	7 19.42	1.128
Wed.	10	17 10 14.42	11.006	22 57 50.8	13.06	16 17.21	70.97	6 52.15	1.147
Thur.	11	17 14 38.76	11.022	23 2 51.2	11.92	16 17.31	71.02	6 24.44	1.163
Frid.	12	17 19 3.50	11.038	23 7 24.3	10.77	16 17.40	71.07	5 56.34	1.179
Sat.	13	17 23 27.58	11.052	23 11 29.8	9.62	16 17.49	71.11	5 27.88	1.192
Sun.	14	17 27 54.00	11.065	23 15 7.6	8.46	16 17.57	71.15	4 59.09	1.206
Mon.	15	17 32 19.72	11.076	23 18 17.4	7.31	16 17.65	71.18	4 30.02	1.217
Tues.	16	17 36 45.70	11.086	23 20 59.3	6.14	16 17.73	71.21	4 0.70	1.226
Wed.	17	17 41 11.88	11.095	23 23 13.2	4.97	16 17.80	71.24	3 31.15	1.235
Thur.	18	17 45 38.25	11.102	23 24 59.0	3.79	16 17.87	71.26	3 1.42	1.242
Frid.	19	17 50 4.78	11.107	23 26 16.4	2.63	16 17.94	71.27	2 31 53	1.247
Sat.	20	17 54 31.40	11.111	23 27 5.5	1.45	16 18.00	71.28	2 1.55	1.249
Sun.	21	17 58 58.09	11.113	23 27 26.2	– 0.27	16 18.06	71.29	1 31.50	1.251
Mon.	22	18 3 24.81	11.113	23 27 18.6	+ 0.91	16 18.12	71.30	1 1.42	1.253
Tues.	23	18 7 51.52	11.111	23 26 42.7	2.09	16 18.17	71.30	0 31.34	1.251
Wed.	24	18 12 18.17	11.109	23 25 38.5	3.27	16 18.22	71.29	0 1.33	1.249
Thur.	25	18 16 44.75	11.104	23 24 5.9	4.45	16 18.26	71.28	0 28.60	1.244
Frid.	26	18 21 11.20	11.098	23 22 5.1	5.62	16 18.30	71.27	0 58.41	1.238
Sat.	27	18 25 37.50	11.090	23 19 36.0	6.79	16 18.33	71.25	1 28.08	1.230
Sun.	28	18 30 3.61	11.082	23 16 38.7	7.97	16 18.36	71.22	1 57.55	1.222
Mon.	29	18 34 29.49	11.073	23 13 13.4	9.13	16 18.38	71.19	2 26.79	1.213
Tues.	30	18 38 55.12	11.063	23 9 20.3	10.29	16 18.40	71.16	2 55.78	1.203
Wed.	31	18 43 20.46	11.051	23 4 59.5	11.45	16 18.40	71.12	3 24.48	1.191
Thur.	32	18 47 45.50	11.038	S. 23 0 11.0	12.60	16 18.40	71.07	3 52.87	1.178

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, *to be added to* / *subtracted from* *Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	16 30 59.24	10.804	S. 21 52 51.0	22.92	10 39.45	0.948	16 41 38.69
Tues.	2	16 35 18.85	10.830	22 1 48.6	21.86	10 16.40	0.974	16 45 35.25
Wed.	3	16 39 39.07	10.855	22 10 20.8	20.80	9 52.74	0.999	16 49 31.81
Thur.	4	16 43 59.87	10.879	22 18 27.2	19.72	9 28.50	1.023	16 53 28.37
Frid.	5	16 48 21.24	10.902	22 26 7.6	18.63	9 3.68	1.046	16 57 24.92
Sat.	6	16 52 43.15	10.924	22 33 21.8	17.54	8 38.33	1.068	17 1 21.48
Sun.	7	16 57 5.58	10.945	22 40 9.5	16.44	8 12.46	1.089	17 5 18.04
Mon.	8	17 1 28.49	10.965	22 46 30.7	15.32	7 46.11	1.109	17 9 14.60
Tues.	9	17 5 51.88	10.984	22 52 25.1	14.20	7 19.28	1.128	17 13 11.16
Wed.	10	17 10 15.71	11.003	22 57 52.4	13.07	6 52.01	1.147	17 17 7.72
Thur.	11	17 14 39.96	11.019	23 2 52.6	11.93	6 24.31	1.163	17 21 4.27
Frid.	12	17 19 4.61	11.035	23 7 25.4	10.78	5 56.22	1.179	17 25 0.83
Sat.	13	17 23 29.61	11.048	23 11 30.7	9.63	5 27.78	1.192	17 28 57.39
Sun.	14	17 27 54.95	11.062	23 15 8.3	8.47	4 59.00	1.206	17 32 53.95
Mon.	15	17 32 20.58	11.073	23 18 18.0	7.32	4 29.93	1.217	17 36 50.51
Tues.	16	17 36 46.46	11.082	23 20 59.7	6.15	4 0.61	1.226	17 40 47.07
Wed.	17	17 41 12.56	11.091	23 23 13.5	4.97	3 31.07	1.235	17 44 43.63
Thur.	18	17 45 38.84	11.098	23 24 59.2	3.79	3 1.35	1.242	17 48 40.19
Frid.	19	17 50 5.27	11.103	23 26 16.6	2.63	2 31.47	1.247	17 52 36.74
Sat.	20	17 54 31.80	11.107	23 27 5.6	1.45	2 1.50	1.249	17 56 33.30
Sun.	21	17 58 58.40	11.109	23 27 26.2	− 0.27	1 31.46	1.251	18 0 29.86
Mon.	22	18 3 25.03	11.109	23 27 18.6	+ 0.91	1 1.37	1.253	18 4 26.42
Tues.	23	18 7 51.65	11.107	23 26 42.7	2.09	0 31.33	1.251	18 8 22.98
Wed.	24	18 12 18.21	11.105	23 25 38.5	3.27	0 1.35	1.249	18 12 19.54
Thur.	25	18 16 44.69	11.100	23 24 6.0	4.45	0 28.59	1.244	18 16 16.10
Frid.	26	18 21 11.05	11.094	23 22 5.2	5.62	0 58.39	1.238	18 20 12.66
Sat.	27	18 25 37.26	11.086	23 19 36.1	6.70	1 28.05	1.230	18 24 9.21
Sun.	28	18 30 3.28	11.078	23 16 38.9	7.97	1 57.51	1.222	18 28 5.77
Mon.	29	18 34 29.07	11.069	23 13 13.8	9.13	2 26.74	1.213	18 32 2.33
Tues.	30	18 38 54.61	11.059	23 9 20.8	10.29	2 55.72	1.203	18 35 58.89
Wed.	31	18 43 19.86	11.047	23 5 0.1	11.44	3 24.41	1.191	18 39 55.45
Thur.	32	18 47 44.81	11.034	S. 23 0 11.8	12.59	3 52.80	1.178	18 43 52.01

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

Diff. for 1 hour. +9ˢ.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	THE SUN'S Diff. for 1 hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	335	249 25 54.0	25 20.4	152.13	−0.04	9.9936948	−28.1	7 17 9.48
2	336	250 26 45.6	26 11.9	152.17	+0.09	.9936284	27.1	7 13 13.57
3	337	251 27 38.1	27 4.2	152.21	0.21	.9935646	26.1	7 9 17.66
4	338	252 28 31.6	27 57.5	152.25	0.41	.9935033	25.0	7 5 21.75
5	339	253 29 26.0	28 51.7	152.29	0.50	.9934445	24.0	7 1 25.83
6	340	254 30 21.4	29 46.9	152.33	0.57	.9933883	22.9	6 57 29.92
7	341	255 31 18.0	30 43.4	152.37	0.62	.9933347	21.8	6 53 34.01
8	342	256 32 15.7	31 40.9	152.42	0.65	.9932836	20.7	6 49 38.10
9	343	257 33 14.5	32 39.5	152.46	0.65	.9932350	19.7	6 45 42.18
10	344	258 34 14.4	33 39.2	152.51	0.62	.9931888	18.7	6 41 46.27
11	345	259 35 15.3	34 39.9	152.56	0.56	.9931448	17.8	6 37 50.36
12	346	260 36 17.2	35 41.6	152.60	0.48	.9931029	17.0	6 33 54.45
13	347	261 37 20.2	36 44.4	152.64	0.38	.9930630	16.2	6 29 58.54
14	348	262 38 24.1	37 48.1	152.68	0.26	.9930251	15.4	6 26 2.63
15	349	263 39 28.9	38 52.7	152.72	+0.13	.9929893	14.6	6 22 6.72
16	350	264 40 34.7	39 58.3	152.75	0.00	.9929552	13.9	6 18 10.80
17	351	265 41 41.3	41 4.8	152.78	−0.13	.9929227	13.2	6 14 14.88
18	352	266 42 48.5	42 11.8	152.81	0.25	.9928919	12.5	6 10 18.97
19	353	267 43 56.2	43 19.3	152.83	0.35	.9928626	11.8	6 6 23.06
20	354	268 45 4.4	44 27.3	152.85	0.42	.9928348	11.2	6 2 27.15
21	355	269 46 13.0	45 35.7	152.87	0.47	.9928086	10.5	5 58 31.23
22	356	270 47 21.9	46 44.4	152.88	0.49	.9927841	9.8	5 54 35.32
23	357	271 48 31.1	47 53.4	152.89	0.48	.9927614	9.1	5 50 39.41
24	358	272 49 40.3	49 2.4	152.89	0.44	.9927405	8.3	5 46 43.49
25	359	273 50 49.5	50 11.4	152.89	0.37	.9927216	7.5	5 42 47.57
26	360	274 51 58.7	51 20.4	152.89	0.28	.9927047	6.6	5 38 51.66
27	361	275 53 7.9	52 29.5	152.89	0.16	.9926900	5.6	5 34 55.75
28	362	276 54 17.0	53 38.4	152.88	−0.04	.9926777	4.6	5 30 59.83
29	363	277 55 26.0	54 47.2	152.87	+0.09	.9926678	3.5	5 27 3.92
30	364	278 56 34.7	55 55.7	152.86	0.23	.9926606	2.4	5 23 8.01
31	365	279 57 43.2	57 4.0	152.85	0.37	.9926562	1.3	5 19 12.10
32	366	280 58 51.4	58 12.0	152.84	+0.48	9.9926544	− 0.2	5 15 16.18

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

Diff. for 1 hour.
−9s.8296

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 13.0	16 11.0	59 24.4	−0.51	59 17.0	−0.71	9 48.8	2.15	11.3
2	16 8.3	16 5.1	59 7.3	0.91	58 55.3	1.10	10 42.1	2.28	12.3
3	16 1.2	15 56.7	58 41.0	1.28	58 24.6	1.44	11 38.2	2.39	13.3
4	15 51.8	15 46.4	58 6.5	1.57	57 46.9	1.68	12 36.2	2.44	14.3
5	15 40.8	15 35.0	57 26.3	1.75	57 5.1	1.79	13 34.5	2.41	15.3
6	15 29.2	15 23.4	56 43.6	1.79	56 22.3	1.75	14 31.0	2.29	16.3
7	15 17.8	15 12.4	56 1.6	1.69	55 41.9	1.59	15 24.1	2.13	17.3
8	15 7.4	15 2.9	55 23.5	1.46	55 6.8	1.31	16 13.2	1.96	18.3
9	14 58.8	14 55.4	54 52.1	1.14	54 39.5	0.96	16 58.5	1.82	19.3
10	14 52.6	14 50.5	54 29.2	0.76	54 21.5	0.54	17 40.7	1.71	20.3
11	14 49.1	14 48.4	54 16.4	−0.32	54 13.9	−0.10	18 20.9	1.65	21.3
12	14 48.5	14 49.2	54 14.0	+0.12	54 16.7	+0.34	19 0.2	1.63	22.3
13	14 50.7	14 52.8	54 22.1	0.55	54 30.0	0.76	19 39.8	1.67	23.3
14	14 55.6	14 59.0	54 40.2	0.95	54 52.6	1.12	20 20.9	1.76	24.3
15	15 2.9	15 7.3	55 7.0	1.27	55 23.1	1.40	21 4.7	1.90	25.3
16	15 12.0	15 17.1	55 40.6	1.51	55 59.2	1.59	21 52.2	2.07	26.3
17	15 22.4	15 27.8	56 18.6	1.64	56 38.4	1.66	22 44.2	2.26	27.3
18	15 33.2	15 38.5	56 58.3	1.65	57 17.8	1.60	23 40.6	2.43	28.3
19	15 43.6	15 48.5	57 36.6	1.53	57 54.5	1.44	☌		29.3
20	15 53.0	15 57.1	58 11.0	1.32	58 25.9	1.17	0 40.1	2.52	0.7
21	16 0.7	16 3.8	58 39.1	1.02	58 50.4	0.86	1 40.7	2.51	1.7
22	16 6.3	16 8.3	58 59.8	0.70	59 7.2	0.54	2 39.8	2.41	2.7
23	16 9.8	16 10.8	59 12.7	0.39	59 16.4	+0.24	3 35.9	2.27	3.7
24	16 11.4	16 11.5	59 18.4	+0.10	59 18.8	−0.03	4 28.6	2.13	4.7
25	16 11.2	16 10.6	59 17.8	−0.14	59 15.5	0.24	5 18.5	2.03	5.7
26	16 9.6	16 8.4	59 12.1	0.33	59 7.6	0.41	6 6.6	1.99	6.7
27	16 6.9	16 5.2	59 2.2	0.49	58 55.8	0.57	6 54.4	2.00	7.7
28	16 3.2	16 0.9	58 48.5	0.65	58 40.2	0.73	7 43.1	2.07	8.7
29	15 58.4	15 55.7	58 31.0	0.80	58 20.8	0.88	8 33.9	2.17	9.7
30	15 52.7	15 49.4	58 9.7	0.97	57 57.6	1.05	9 27.4	2.29	10.7
31	15 45.8	15 42.0	57 44.6	1.13	57 30.6	1.20	10 23.5	2.38	11.7
32	15 38.0	15 33.8	57 15.8	−1.26	57 0.3	−1.31	11 21.1	2.40	12.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 1.					WEDNESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 10 8.47	2.2135	N.12 7 45.1	14.976	0	4 1 13.17	2.4177	N.22 17 29.2	9.845
1	2 12 21.39	2.2172	12 22 41.6	14.906	1	4 3 38.35	2.4217	22 27 15.6	9.703
2	2 14 34.53	2.2210	12 37 33.8	14.835	2	4 6 3.77	2.4256	22 36 53.5	9.560
3	2 16 47.90	2.2248	12 52 21.7	14.762	3	4 8 29.42	2.4294	22 46 22.8	9.416
4	2 19 1.50	2.2286	13 7 5.2	14.687	4	4 10 55.30	2.4331	22 55 43.4	9.270
5	2 21 15.33	2.2325	13 21 44.1	14.610	5	4 13 21.40	2.4368	23 4 55.2	9.123
6	2 23 29.40	2.2364	13 36 18.4	14.532	6	4 15 47.72	2.4405	23 13 58.2	8.975
7	2 25 43.70	2.2404	13 50 47.9	14.452	7	4 18 14.26	2.4442	23 22 52.3	8.827
8	2 27 58.25	2.2444	14 5 12.6	14.371	8	4 20 41.02	2.4477	23 31 37.4	8.677
9	2 30 13.04	2.2485	14 19 32.4	14.288	9	4 23 7.99	2.4511	23 40 13.5	8.526
10	2 32 28.07	2.2526	14 33 47.1	14.203	10	4 25 35.15	2.4544	23 48 40.5	8.374
11	2 34 43.35	2.2568	14 47 56.7	14.117	11	4 28 2.51	2.4577	23 56 58.3	8.221
12	2 36 58.89	2.2610	15 2 1.1	14.029	12	4 30 30.07	2.4609	24 5 7.0	8.067
13	2 39 14.68	2.2652	15 16 0.2	13.939	13	4 32 57.82	2.4640	24 13 6.4	7.912
14	2 41 30.71	2.2694	15 29 53.8	13.848	14	4 35 25.75	2.4670	24 20 56.4	7.756
15	2 43 47.00	2.2737	15 43 41.9	13.755	15	4 37 53.86	2.4699	24 28 37.0	7.599
16	2 46 3.56	2.2780	15 57 24.4	13.661	16	4 40 22.14	2.4728	24 36 8.3	7.441
17	2 48 20.38	2.2824	16 11 1.2	13.565	17	4 42 50.59	2.4756	24 43 30.1	7.283
18	2 50 37.45	2.2868	16 24 32.2	13.467	18	4 45 19.21	2.4783	24 50 42.3	7.124
19	2 52 54.79	2.2912	16 37 57.3	13.368	19	4 47 47.98	2.4808	24 57 45.0	6.964
20	2 55 12.39	2.2955	16 51 16.4	13.268	20	4 50 16.90	2.4832	25 4 38.0	6.803
21	2 57 30.25	2.2999	17 4 29.4	13.166	21	4 52 45.96	2.4856	25 11 21.3	6.641
22	2 59 48.38	2.3043	17 17 36.3	13.062	22	4 55 15.17	2.4879	25 17 54.9	6.479
23	3 2 6.78	2.3088	N.17 30 36.9	12.957	23	4 57 44.51	2.4900	N.25 24 18.8	6.316
	TUESDAY 2.					THURSDAY 4.			
0	3 4 25.44	2.3133	N.17 43 31.1	12.850	0	5 0 13.97	2.4920	N.25 30 32.8	6.152
1	3 6 44.37	2.3178	17 56 18.8	12.741	1	5 2 43.55	2.4939	25 36 37.0	5.988
2	3 9 3.58	2.3223	18 9 0.0	12.631	2	5 5 13.24	2.4957	25 42 31.4	5.823
3	3 11 23.05	2.3268	18 21 34.6	12.520	3	5 7 43.04	2.4975	25 48 15.9	5.658
4	3 13 42.79	2.3313	18 34 2.4	12.407	4	5 10 12.94	2.4991	25 53 50.4	5.492
5	3 16 2.80	2.3358	18 46 23.4	12.293	5	5 12 42.93	2.5005	25 59 14.9	5.326
6	3 18 23.08	2.3403	18 58 37.5	12.176	6	5 15 13.00	2.5018	26 4 29.5	5.160
7	3 20 43.63	2.3448	19 10 44.6	12.058	7	5 17 43.15	2.5031	26 9 34.1	4.993
8	3 23 4.45	2.3493	19 22 44.5	11.939	8	5 20 13.37	2.5042	26 14 28.6	4.826
9	3 25 25.54	2.3537	19 34 37.3	11.819	9	5 22 43.65	2.5051	26 19 13.1	4.658
10	3 27 46.89	2.3581	19 46 22.8	11.697	10	5 25 13.98	2.5059	26 23 47.5	4.490
11	3 30 8.51	2.3625	19 58 1.0	11.574	11	5 27 44.36	2.5067	26 28 11.8	4.321
12	3 32 30.39	2.3669	20 9 31.7	11.449	12	5 30 14.78	2.5073	26 32 26.0	4.152
13	3 34 52.54	2.3713	20 20 54.9	11.323	13	5 32 45.23	2.5078	26 36 30.0	3.983
14	3 37 14.95	2.3757	20 32 10.4	11.196	14	5 35 15.71	2.5081	26 40 23.9	3.814
15	3 39 37.62	2.3801	20 43 18.3	11.067	15	5 37 46.20	2.5083	26 44 7.7	3.645
16	3 42 0.56	2.3844	20 54 18.4	10.936	16	5 40 16.70	2.5084	26 47 41.3	3.476
17	3 44 23.76	2.3887	21 5 10.6	10.804	17	5 42 47.20	2.5083	26 51 4.7	3.306
18	3 46 47.21	2.3930	21 15 54.9	10.671	18	5 45 17.70	2.5081	26 54 18.0	3.137
19	3 49 10.91	2.3972	21 26 31.2	10.537	19	5 47 48.18	2.5078	26 57 21.1	2.967
20	3 51 34.87	2.4014	21 36 59.3	10.401	20	5 50 18.64	2.5073	27 0 14.0	2.798
21	3 53 59.08	2.4055	21 47 19.2	10.263	21	5 52 49.06	2.5067	27 2 56.7	2.628
22	3 56 23.53	2.4096	21 57 30.9	10.125	22	5 55 19.44	2.5060	27 5 29.3	2.459
23	3 58 48.23	2.4137	22 7 34.3	9.986	23	5 57 49.77	2.5051	27 7 51.7	2.289
24	4 1 13.17	2.4177	N.22 17 29.2	9.845	24	6 0 20.05	2.5041	N.27 10 4.0	2.120

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 0 20.05	2.5041	N.27 10 4.0	2.120
1	6 2 50.27	2.5030	27 12 6.1	1.950
2	6 5 20.41	2.5017	27 13 58.0	1.781
3	6 7 50.47	2.5003	27 15 39.8	1.613
4	6 10 20.44	2.4988	27 17 11.6	1.445
5	6 12 50.32	2.4971	27 18 33.3	1.277
6	6 15 20.09	2.4953	27 19 44.8	1.109
7	6 17 49.75	2.4933	27 20 46.3	0.941
8	6 20 19.29	2.4912	27 21 37.7	0.774
9	6 22 48.70	2.4890	27 22 19.1	0.608
10	6 25 17.97	2.4867	27 22 50.6	0.442
11	6 27 47.10	2.4842	27 23 12.1	0.276
12	6 30 16.08	2.4816	27 23 23.7	+0.110
13	6 32 44.90	2.4789	27 23 25.4	−0.055
14	6 35 13.55	2.4761	27 23 17.1	0.219
15	6 37 42.03	2.4732	27 22 59.0	0.383
16	6 40 10.33	2.4701	27 22 31.2	0.546
17	6 42 38.44	2.4668	27 21 53.6	0.708
18	6 45 6.35	2.4635	27 21 6.3	0.870
19	6 47 34.06	2.4601	27 20 9.3	1.031
20	6 50 1.56	2.4565	27 19 2.6	1.191
21	6 52 28.84	2.4528	27 17 46.4	1.350
22	6 54 55.90	2.4490	27 16 20.6	1.509
23	6 57 22.73	2.4451	N.27 14 45.3	1.667

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 59 49.31	2.4411	N.27 13 0.6	1.824
1	7 2 15.65	2.4369	27 11 6.4	1.981
2	7 4 41.74	2.4327	27 9 2.9	2.136
3	7 7 7.58	2.4284	27 6 50.1	2.290
4	7 9 33.15	2.4240	27 4 28.1	2.444
5	7 11 58.45	2.4194	27 1 56.9	2.597
6	7 14 23.48	2.4148	26 59 16.5	2.749
7	7 16 48.23	2.4101	26 56 27.0	2.900
8	7 19 12.69	2.4053	26 53 28.5	3.050
9	7 21 36.86	2.4003	26 50 21.0	3.199
10	7 24 0.73	2.3953	26 47 4.6	3.347
11	7 26 24.30	2.3902	26 43 39.4	3.493
12	7 28 47.56	2.3850	26 40 5.4	3.639
13	7 31 10.51	2.3798	26 36 22.6	3.785
14	7 33 33.14	2.3745	26 32 31.2	3.929
15	7 35 55.45	2.3692	26 28 31.2	4.072
16	7 38 17.44	2.3638	26 24 22.6	4.213
17	7 40 39.10	2.3582	26 20 5.6	4.353
18	7 43 0.42	2.3526	26 15 40.2	4.493
19	7 45 21.40	2.3469	26 11 6.5	4.632
20	7 47 42.05	2.3411	26 6 24.4	4.770
21	7 50 2.35	2.3353	26 1 34.1	4.906
22	7 52 22.29	2.3295	25 56 35.7	5.041
23	7 54 41.88	2.3236	25 51 29.3	5.174
24	7 57 1.12	2.3177	N.25 46 14.8	5.306

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 57 1.12	2.3177	N.25 46 14.8	5.306
1	7 59 20.00	2.3117	25 40 52.4	5.438
2	8 1 38.52	2.3056	25 35 22.2	5.569
3	8 3 56.67	2.2995	25 29 44.2	5.698
4	8 6 14.46	2.2934	25 23 58.5	5.826
5	8 8 31.88	2.2872	25 18 5.2	5.953
6	8 10 48.92	2.2810	25 12 4.2	6.079
7	8 13 5.59	2.2748	25 5 55.7	6.203
8	8 15 21.89	2.2685	24 59 39.9	6.326
9	8 17 37.81	2.2622	24 53 16.7	6.448
10	8 19 53.35	2.2559	24 46 46.2	6.569
11	8 22 8.51	2.2495	24 40 8.5	6.688
12	8 24 23.29	2.2431	24 33 23.7	6.806
13	8 26 37.68	2.2367	24 26 31.8	6.923
14	8 28 51.69	2.2303	24 19 33.0	7.039
15	8 31 5.31	2.2238	24 12 27.3	7.153
16	8 33 18.55	2.2174	24 5 14.7	7.266
17	8 35 31.40	2.2110	23 57 55.3	7.378
18	8 37 43.87	2.2046	23 50 29.3	7.489
19	8 39 55.95	2.1981	23 42 56.7	7.598
20	8 42 7.64	2.1916	23 35 17.5	7.706
21	8 44 18.94	2.1851	23 27 31.8	7.814
22	8 46 29.85	2.1787	23 19 39.8	7.920
23	8 48 40.37	2.1722	N.23 11 41.4	8.025

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 50 50.51	2.1658	N.23 3 36.8	8.129
1	8 53 0.26	2.1593	22 55 26.0	8.231
2	8 55 9.62	2.1529	22 47 9.1	8.332
3	8 57 18.60	2.1464	22 38 46.2	8.432
4	8 59 27.19	2.1400	22 30 17.3	8.531
5	9 1 35.40	2.1336	22 21 42.5	8.628
6	9 3 43.22	2.1272	22 13 1.9	8.724
7	9 5 50.66	2.1208	22 4 15.6	8.820
8	9 7 57.72	2.1145	21 55 23.5	8.914
9	9 10 4.40	2.1082	21 46 25.8	9.007
10	9 12 10.70	2.1019	21 37 22.7	9.098
11	9 14 16.63	2.0957	21 28 14.1	9.189
12	9 16 22.18	2.0894	21 19 0.0	9.279
13	9 18 27.36	2.0832	21 9 40.6	9.367
14	9 20 32.16	2.0770	21 0 16.0	9.454
15	9 22 36.59	2.0708	20 50 46.2	9.539
16	9 24 40.65	2.0647	20 41 11.3	9.624
17	9 26 44.35	2.0586	20 31 31.4	9.708
18	9 28 47.68	2.0525	20 21 46.4	9.791
19	9 30 50.65	2.0465	20 11 56.5	9.872
20	9 32 53.26	2.0406	20 2 1.8	9.952
21	9 34 55.52	2.0347	19 52 2.3	10.032
22	9 36 57.42	2.0288	19 41 58.0	10.110
23	9 38 58.97	2.0229	19 31 49.1	10.187
24	9 41 0.17	2.0171	N.19 21 35.6	10.263

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 9.					THURSDAY 11.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 41 0.17	2.0171	N.19 21 35.6	10.263	0	11 12 11.74	1.8070	N. 9 59 37.8	12.819
1	9 43 1.03	2.0114	19 11 17.5	10.338	1	11 14 0.08	1.8043	9 46 47.6	12.853
2	9 45 1.54	2.0057	19 0 55.0	10.412	2	11 15 48.26	1.8017	9 33 55.5	12.886
3	9 47 1.71	2.0000	18 50 28.1	10.485	3	11 17 36.28	1.7991	9 21 1.4	12.918
4	9 49 1.54	1.9944	18 39 56.8	10.557	4	11 19 24.15	1.7966	9 8 5.4	12.949
5	9 51 1.04	1.9888	18 29 21.3	10.628	5	11 21 11.87	1.7942	8 55 7.6	12.979
6	9 53 0.20	1.9833	18 18 41.5	10.698	6	11 22 59.45	1.7919	8 42 7.9	13.009
7	9 54 59.03	1.9778	18 7 57.5	10.767	7	11 24 46.89	1.7896	8 29 6.4	13.039
8	9 56 57.54	1.9724	17 57 9.5	10.835	8	11 26 34.20	1.7874	8 16 3.2	13.067
9	9 58 55.73	1.9671	17 46 17.5	10.901	9	11 28 21.37	1.7852	8 2 58.3	13.095
10	10 0 53.59	1.9618	17 35 21.4	10.967	10	11 30 8.42	1.7832	7 49 51.8	13.122
11	10 2 51.14	1.9565	17 24 21.4	11.032	11	11 31 55.35	1.7812	7 36 43.6	13.149
12	10 4 48.37	1.9513	17 13 17.6	11.096	12	11 33 42.16	1.7793	7 23 33.9	13.175
13	10 6 45.29	1.9462	17 2 9.9	11.159	13	11 35 28.86	1.7774	7 10 22.6	13.201
14	10 8 41.91	1.9411	16 50 58.5	11.221	14	11 37 15.45	1.7756	6 57 9.8	13.225
15	10 10 38.22	1.9361	16 39 43.4	11.282	15	11 39 1.94	1.7739	6 43 55.6	13.249
16	10 12 34.24	1.9311	16 28 24.7	11.342	16	11 40 48.32	1.7723	6 30 39.9	13.272
17	10 14 29.96	1.9262	16 17 2.4	11.401	17	11 42 34.61	1.7708	6 17 22.9	13.295
18	10 16 25.39	1.9214	16 5 36.6	11.459	18	11 44 20.82	1.7693	6 4 4.5	13.317
19	10 18 20.53	1.9166	15 54 7.3	11.517	19	11 46 6.94	1.7679	5 50 44.8	13.339
20	10 20 15.38	1.9119	15 42 34.6	11.573	20	11 47 52.97	1.7666	5 37 23.8	13.360
21	10 22 9.95	1.9073	15 30 58.6	11.628	21	11 49 38.92	1.7653	5 24 1.6	13.380
22	10 24 4.25	1.9027	15 19 19.2	11.683	22	11 51 24.81	1.7642	5 10 38.2	13.399
23	10 25 58.28	1.8982	N.15 7 36.5	11.737	23	11 53 10.63	1.7632	N. 4 57 13.6	13.418
WEDNESDAY 10.					FRIDAY 12.				
0	10 27 52.03	1.8937	N.14 55 50.7	11.790	0	11 54 56.39	1.7622	N. 4 43 48.0	13.436
1	10 29 45.52	1.8893	14 44 1.7	11.843	1	11 56 42.09	1.7612	4 30 21.3	13.454
2	10 31 38.75	1.8850	14 32 9.6	11.894	2	11 58 27.73	1.7603	4 16 53.5	13.471
3	10 33 31.72	1.8807	14 20 14.4	11.944	3	12 0 13.32	1.7595	4 3 24.7	13.488
4	10 35 24.44	1.8765	14 8 16.3	11.993	4	12 1 58.87	1.7588	3 49 55.0	13.504
5	10 37 16.90	1.8723	13 56 15.2	12.042	5	12 3 44.38	1.7582	3 36 24.3	13.519
6	10 39 9.12	1.8683	13 44 11.2	12.090	6	12 5 29.86	1.7577	3 22 52.7	13.533
7	10 41 1.10	1.8643	13 32 4.4	12.137	7	12 7 15.31	1.7572	3 9 20.3	13.547
8	10 42 52.84	1.8604	13 19 54.7	12.183	8	12 9 0.72	1.7568	2 55 47.1	13.560
9	10 44 44.35	1.8565	13 7 42.3	12.229	9	12 10 46.11	1.7564	2 42 13.1	13.573
10	10 46 35.62	1.8527	12 55 27.2	12.274	10	12 12 31.49	1.7562	2 28 38.4	13.585
11	10 48 26.67	1.8490	12 43 9.4	12.318	11	12 14 16.86	1.7561	2 15 3.0	13.596
12	10 50 17.50	1.8454	12 30 49.0	12.361	12	12 16 2.22	1.7560	2 1 26.9	13.607
13	10 52 8.11	1.8418	12 18 26.1	12.403	13	12 17 47.57	1.7559	1 47 50.2	13.617
14	10 53 58.51	1.8383	12 6 0.6	12.445	14	12 19 32.93	1.7560	1 34 12.9	13.626
15	10 55 48.70	1.8348	11 53 32.6	12.486	15	12 21 18.29	1.7561	1 20 35.0	13.635
16	10 57 38.69	1.8315	11 41 2.3	12.525	16	12 23 3.66	1.7563	1 6 56.7	13.643
17	10 59 28.48	1.8282	11 28 29.6	12.564	17	12 24 49.05	1.7566	0 53 17.9	13.651
18	11 1 18.07	1.8250	11 15 54.6	12.603	18	12 26 34.45	1.7570	0 39 38.6	13.658
19	11 3 7.47	1.8218	11 3 17.3	12.641	19	12 28 19.88	1.7574	0 25 58.9	13.664
20	11 4 56.68	1.8187	10 50 37.7	12.678	20	12 30 5.34	1.7579	N. 0 12 18.9	13.670
21	11 6 45.71	1.8157	10 37 55.9	12.714	21	12 31 50.83	1.7585	S. 0 1 21.4	13.675
22	11 8 34.56	1.8127	10 25 12.0	12.750	22	12 33 36.36	1.7592	0 15 2.1	13.679
23	11 10 23.24	1.8098	10 12 25.9	12.785	23	12 35 21.94	1.7600	0 28 43.0	13.683
24	11 12 11.74	1.8070	N. 9 59 37.8	12.819	24	12 37 7.56	1.7608	S. 0 42 24.1	13.686

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 37 7.56	1.7608	S. 0 42 24.1	13.686
1	12 38 53.23	1.7617	0 56 5.3	13.688
2	12 40 38.96	1.7627	1 9 46.7	13.690
3	12 42 24.75	1.7637	1 23 28.2	13.692
4	12 44 10.61	1.7649	1 37 9.7	13.692
5	12 45 56.54	1.7661	1 50 51.2	13.692
6	12 47 42.54	1.7674	2 4 32.7	13.691
7	12 49 28.62	1.7688	2 18 14.1	13.690
8	12 51 14.79	1.7702	2 31 55.5	13.687
9	12 53 1.04	1.7717	2 45 36.7	13.684
10	12 54 47.39	1.7733	2 59 17.6	13.681
11	12 56 33.84	1.7749	3 12 58.3	13.677
12	12 58 20.39	1.7767	3 26 38.8	13.672
13	13 0 7.05	1.7785	3 40 19.0	13.667
14	13 1 53.81	1.7804	3 53 58.8	13.661
15	13 3 40.69	1.7824	4 7 38.2	13.653
16	13 5 27.70	1.7845	4 21 17.1	13.645
17	13 7 14.83	1.7867	4 34 55.5	13.637
18	13 9 2.10	1.7889	4 48 33.5	13.628
19	13 10 49.50	1.7912	5 2 10.9	13.618
20	13 12 37.04	1.7936	5 15 47.6	13.607
21	13 14 24.73	1.7960	5 29 23.7	13.596
22	13 16 12.56	1.7985	5 42 59.1	13.583
23	13 18 0.54	1.8011	S. 5 56 33.7	13.570

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 19 48.69	1.8038	S. 6 10 7.5	13.556
1	13 21 37.00	1.8066	6 23 40.5	13.542
2	13 23 25.48	1.8094	6 37 12.6	13.527
3	13 25 14.13	1.8123	6 50 43.7	13.511
4	13 27 2.95	1.8153	7 4 13.9	13.494
5	13 28 51.95	1.8183	7 17 43.1	13.477
6	13 30 41.15	1.8215	7 31 11.1	13.458
7	13 32 30.54	1.8247	7 44 38.0	13.439
8	13 34 20.12	1.8280	7 58 3.8	13.419
9	13 36 9.90	1.8314	8 11 28.4	13.398
10	13 37 59.89	1.8346	8 24 51.6	13.376
11	13 39 50.08	1.8383	8 38 13.5	13.354
12	13 41 40.49	1.8420	8 51 34.1	13.331
13	13 43 31.12	1.8457	9 4 53.3	13.307
14	13 45 21.97	1.8494	9 18 10.9	13.282
15	13 47 13.05	1.8532	9 31 27.0	13.256
16	13 49 4.35	1.8571	9 44 41.6	13.229
17	13 50 55.89	1.8611	9 57 54.5	13.201
18	13 52 47.68	1.8652	10 11 5.7	13.172
19	13 54 39.71	1.8693	10 24 15.1	13.143
20	13 56 31.99	1.8735	10 37 22.8	13.113
21	13 58 24.53	1.8778	10 50 28.7	13.082
22	14 0 17.32	1.8821	11 3 32.6	13.049
23	14 2 10.37	1.8865	11 16 34.5	13.016
24	14 4 3.70	1.8910	S. 11 29 34.5	12.982

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 4 3.70	1.8910	S. 11 29 34.5	12.982
1	14 5 57.30	1.8956	11 42 32.4	12.947
2	14 7 51.17	1.9002	11 55 28.1	12.911
3	14 9 45.32	1.9049	12 8 21.6	12.873
4	14 11 39.76	1.9098	12 21 12.8	12.834
5	14 13 34.49	1.9147	12 34 1.7	12.795
6	14 15 29.52	1.9196	12 46 48.2	12.755
7	14 17 24.84	1.9245	12 59 32.2	12.713
8	14 19 20.46	1.9295	13 12 13.8	12.671
9	14 21 16.39	1.9347	13 24 52.8	12.628
10	14 23 12.63	1.9399	13 37 29.1	12.584
11	14 25 9.18	1.9452	13 50 2.8	12.538
12	14 27 6.05	1.9505	14 2 33.7	12.491
13	14 29 3.24	1.9559	14 15 1.7	12.443
14	14 31 0.76	1.9614	14 27 26.9	12.394
15	14 32 58.61	1.9669	14 39 49.1	12.345
16	14 34 56.79	1.9725	14 52 8.3	12.294
17	14 36 55.31	1.9782	15 4 24.4	12.242
18	14 38 54.18	1.9840	15 16 37.3	12.188
19	14 40 53.39	1.9898	15 28 46.9	12.133
20	14 42 52.95	1.9957	15 40 53.3	12.077
21	14 44 52.87	2.0016	15 52 56.3	12.021
22	14 46 53.14	2.0076	16 4 55.8	11.963
23	14 48 53.77	2.0136	S. 16 16 51.8	11.904

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 50 54.77	2.0197	S. 16 28 44.3	11.844
1	14 52 56.14	2.0258	16 40 33.1	11.782
2	14 54 57.87	2.0320	16 52 18.1	11.719
3	14 56 59.98	2.0383	17 3 59.3	11.654
4	14 59 2.47	2.0446	17 15 36.6	11.588
5	15 1 5.34	2.0510	17 27 9.9	11.522
6	15 3 8.59	2.0574	17 38 39.2	11.454
7	15 5 12.23	2.0639	17 50 4.4	11.385
8	15 7 16.26	2.0704	18 1 25.4	11.314
9	15 9 20.68	2.0770	18 12 42.1	11.242
10	15 11 25.50	2.0836	18 23 54.4	11.169
11	15 13 30.72	2.0903	18 35 2.3	11.094
12	15 15 36.33	2.0970	18 46 5.7	11.018
13	15 17 42.35	2.1038	18 57 4.5	10.941
14	15 19 48.78	2.1105	19 7 58.6	10.862
15	15 21 55.61	2.1173	19 18 48.0	10.782
16	15 24 2.86	2.1242	19 29 32.5	10.700
17	15 26 10.52	2.1311	19 40 12.0	10.617
18	15 28 18.59	2.1380	19 50 46.6	10.533
19	15 30 27.08	2.1450	20 1 16.1	10.448
20	15 32 35.99	2.1520	20 11 40.4	10.361
21	15 34 45.32	2.1591	20 21 59.4	10.273
22	15 36 55.08	2.1661	20 32 13.1	10.183
23	15 39 5.26	2.1732	20 42 21.4	10.092
24	15 41 15.86	2.1803	S. 20 52 24.1	9.999

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 17.					FRIDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 41 15.86	2.1803	S. 20 52 24.1	9.999	0	17 33 57.07	2.4987	S. 26 37 37.6	3.838
1	15 43 26.89	2.1874	21 2 21.2	9.905	1	17 36 27.14	2.5037	26 41 23.1	3.677
2	15 45 38.35	2.1945	21 12 12.7	9.809	2	17 38 57.51	2.5086	26 44 58.9	3.515
3	15 47 50.24	2.2017	21 21 58.4	9.712	3	17 41 28.17	2.5133	26 48 24.9	3.352
4	15 50 2.56	2.2089	21 31 38.1	9.613	4	17 43 59.10	2.5179	26 51 41.1	3.188
5	15 52 15.31	2.2161	21 41 11.9	9.513	5	17 46 30.31	2.5224	26 54 47.4	3.022
6	15 54 28.49	2.2232	21 50 39.7	9.412	6	17 49 1.79	2.5267	26 57 43.7	2.855
7	15 56 42.10	2.2304	22 0 1.4	9.309	7	17 51 33.53	2.5310	27 0 30.0	2.688
8	15 58 56.14	2.2376	22 9 16.8	9.204	8	17 54 5.51	2.5352	27 3 6.3	2.520
9	16 1 10.62	2.2449	22 18 25.9	9.098	9	17 56 37.74	2.5392	27 5 32.4	2.351
10	16 3 25.53	2.2521	22 27 28.6	8.991	10	17 59 10.21	2.5430	27 7 48.4	2.181
11	16 5 40.87	2.2593	22 36 24.8	8.882	11	18 1 42.90	2.5467	27 9 54.2	2.011
12	16 7 56.65	2.2665	22 45 14.4	8.772	12	18 4 15.81	2.5503	27 11 49.7	1.840
13	16 10 12.86	2.2737	22 53 57.4	8.660	13	18 6 48.93	2.5537	27 13 34.9	1.667
14	16 12 29.50	2.2809	23 2 33.6	8.547	14	18 9 22.25	2.5569	27 15 9.7	1.494
15	16 14 46.57	2.2881	23 11 3.0	8.432	15	18 11 55.76	2.5600	27 16 34.1	1.320
16	16 17 4.07	2.2953	23 19 25.4	8.316	16	18 14 29.45	2.5630	27 17 48.1	1.146
17	16 19 22.00	2.3024	23 27 40.8	8.198	17	18 17 3.32	2.5658	27 18 51.6	0.971
18	16 21 40.36	2.3096	23 35 49.1	8.079	18	18 19 37.35	2.5685	27 19 44.6	0.795
19	16 23 59.15	2.3167	23 43 50.2	7.958	19	18 22 11.54	2.5711	27 20 27.0	0.619
20	16 26 18.36	2.3237	23 51 44.0	7.835	20	18 24 45.88	2.5734	27 20 58.9	0.443
21	16 28 37.99	2.3307	23 59 30.4	7.711	21	18 27 20.35	2.5756	27 21 20.2	0.266
22	16 30 58.04	2.3377	24 7 9.3	7.585	22	18 29 54.95	2.5777	27 21 30.8	−0.088
23	16 33 18.51	2.3447	S. 24 14 40.6	7.458	23	18 32 29.67	2.5796	S. 27 21 30.7	+0.090
	THURSDAY 18.					SATURDAY 20.			
0	16 35 39.40	2.3516	S. 24 22 4.3	7.330	0	18 35 4.50	2.5813	S. 27 21 20.0	0.268
1	16 38 0.70	2.3585	24 29 20.3	7.201	1	18 37 39.43	2.5829	27 20 58.6	0.447
2	16 40 22.42	2.3654	24 36 28.4	7.070	2	18 40 14.45	2.5843	27 20 26.4	0.626
3	16 42 44.55	2.3722	24 43 28.6	6.938	3	18 42 49.55	2.5856	27 19 43.5	0.805
4	16 45 7.08	2.3790	24 50 20.9	6.804	4	18 45 24.72	2.5867	27 18 49.8	0.984
5	16 47 30.02	2.3857	24 57 5.1	6.668	5	18 47 59.95	2.5877	27 17 45.3	1.164
6	16 49 53.36	2.3923	25 3 41.0	6.531	6	18 50 35.24	2.5885	27 16 30.1	1.344
7	16 52 17.10	2.3989	25 10 8.6	6.392	7	18 53 10.57	2.5891	27 15 4.1	1.524
8	16 54 41.23	2.4054	25 16 28.0	6.253	8	18 55 45.93	2.5895	27 13 27.2	1.704
9	16 57 5.75	2.4119	25 22 39.0	6.112	9	18 58 21.31	2.5898	27 11 39.5	1.884
10	16 59 30.66	2.4183	25 28 41.4	5.969	10	19 0 56.71	2.5900	27 9 41.1	2.064
11	17 1 55.95	2.4246	25 34 35.2	5.825	11	19 3 32.11	2.5900	27 7 31.9	2.243
12	17 4 21.61	2.4308	25 40 20.4	5.680	12	19 6 7.51	2.5898	27 5 11.9	2.423
13	17 6 47.64	2.4370	25 45 56.8	5.533	13	19 8 42.89	2.5895	27 2 41.1	2.603
14	17 9 14.05	2.4431	25 51 24.4	5.385	14	19 11 18.25	2.5890	26 59 59.5	2.783
15	17 11 40.82	2.4491	25 56 43.1	5.236	15	19 13 53.58	2.5884	26 57 7.1	2.963
16	17 14 7.94	2.4550	26 1 52.7	5.086	16	19 16 28.86	2.5876	26 54 4.0	3.142
17	17 16 35.41	2.4608	26 6 53.3	4.934	17	19 19 4.09	2.5867	26 50 50.1	3.321
18	17 19 3.23	2.4665	26 11 44.8	4.781	18	19 21 39.26	2.5856	26 47 25.5	3.500
19	17 21 31.39	2.4721	26 16 27.1	4.627	19	19 24 14.36	2.5844	26 43 50.2	3.678
20	17 23 59.88	2.4776	26 21 0.0	4.472	20	19 26 49.39	2.5830	26 40 4.2	3.856
21	17 26 28.70	2.4830	26 25 23.6	4.315	21	19 29 24.33	2.5814	26 36 7.6	4.033
22	17 28 57.84	2.4883	26 29 37.8	4.157	22	19 31 59.16	2.5797	26 32 0.3	4.210
23	17 31 27.30	2.4936	26 33 42.5	3.998	23	19 34 33.89	2.5779	26 27 42.4	4.386
24	17 33 57.07	2.4987	S. 26 37 37.6	3.838	24	19 37 8.51	2.5759	S. 26 23 14.0	4.562

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 37 8.51	2.5759	S.26 23 14.0	4.562
1	19 39 43.01	2.5738	26 18 35.0	4.737
2	19 42 17.37	2.5716	26 13 45.6	4.912
3	19 44 51.59	2.5692	26 8 45.7	5.086
4	19 47 25.67	2.5667	26 3 35.3	5.259
5	19 49 59.60	2.5641	25 58 14.6	5.432
6	19 52 33.36	2.5613	25 52 43.5	5.604
7	19 55 6.95	2.5583	25 47 2.1	5.775
8	19 57 40.36	2.5553	25 41 10.5	5.945
9	20 0 13.59	2.5522	25 35 8.7	6.114
10	20 2 46.62	2.5490	25 28 56.8	6.283
11	20 5 19.46	2.5456	25 22 34.8	6.451
12	20 7 52.09	2.5421	25 16 2.7	6.618
13	20 10 24.51	2.5384	25 9 20.6	6.784
14	20 12 56.70	2.5347	25 2 28.6	6.949
15	20 15 28.67	2.5309	24 55 26.7	7.113
16	20 18 0.41	2.5270	24 48 15.1	7.275
17	20 20 31.91	2.5230	24 40 53.8	7.437
18	20 23 3.17	2.5189	24 33 22.7	7.598
19	20 25 34.18	2.5147	24 25 42.0	7.758
20	20 28 4.93	2.5104	24 17 51.8	7.916
21	20 30 35.42	2.5060	24 9 52.1	8.073
22	20 33 5.65	2.5015	24 1 43.1	8.229
23	20 35 35.60	2.4969	S.23 53 24.7	8.383

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 38 5.28	2.4923	S.23 44 57.1	8.536
1	20 40 34.68	2.4876	23 36 20.3	8.689
2	20 43 3.79	2.4829	23 27 34.4	8.840
3	20 45 32.62	2.4781	23 18 39.5	8.990
4	20 48 1.16	2.4732	23 9 35.6	9.138
5	29 50 29.40	2.4683	23 0 22.9	9.285
6	20 52 57.35	2.4633	22 51 1.4	9.431
7	20 55 25.00	2.4582	22 41 31.2	9.575
8	20 57 52.34	2.4531	22 31 52.4	9.718
9	21 0 19.37	2.4479	22 22 5.1	9.859
10	21 2 46.09	2.4427	22 12 9.3	9.999
11	21 5 12.50	2.4375	22 2 5.2	10.138
12	21 7 38.59	2.4322	21 51 52.8	10.275
13	21 10 4.36	2.4269	21 41 32.2	10.411
14	21 12 29.82	2.4216	21 31 3.5	10.545
15	21 14 51.96	2.4162	21 20 26.8	10.678
16	21 17 19.77	2.4108	21 9 42.2	10.809
17	21 19 44.26	2.4054	20 58 49.8	10.938
18	21 22 8.42	2.4000	20 47 49.6	11.066
19	21 24 32.25	2.3945	20 36 41.8	11.193
20	21 26 55.76	2.3891	20 25 26.4	11.318
21	21 29 18.94	2.3836	20 14 3.6	11.442
22	21 31 41.79	2.3782	20 2 33.4	11.563
23	21 34 4.31	2.3727	19 50 56.0	11.683
24	21 36 26.51	2.3672	S.19 39 11.4	11.802

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 36 26.51	2.3673	S.19 39 11.4	11.802
1	21 38 48.38	2.3617	19 27 19.7	11.920
2	21 41 9.91	2.3562	19 15 21.0	12.036
3	21 43 31.11	2.3507	19 3 15.4	12.149
4	21 45 51.99	2.3452	18 51 3.1	12.261
5	21 48 12.54	2.3398	18 38 44.1	12.372
6	21 50 32.76	2.3343	18 26 18.4	12.482
7	21 52 52.66	2.3289	18 13 46.2	12.590
8	21 55 12.23	2.3235	18 1 7.6	12.696
9	21 57 31.48	2.3181	17 48 22.7	12.800
10	21 59 50.40	2.3127	17 35 31.6	12.903
11	22 2 9.00	2.3074	17 22 34.4	13.004
12	22 4 27.29	2.3021	17 9 31.1	13.104
13	22 6 45.26	2.2968	16 56 21.9	13.202
14	22 9 2.91	2.2916	16 43 6.9	13.298
15	22 11 20.25	2.2864	16 29 46.2	13.393
16	22 13 37.28	2.2812	16 16 19.8	13.486
17	22 15 54.00	2.2761	16 2 47.9	13.577
18	22 18 10.41	2.2710	15 49 10.6	13.667
19	22 20 26.52	2.2659	15 35 27.9	13.755
20	22 22 42.32	2.2609	15 21 40.0	13.842
21	22 24 57.83	2.2560	15 7 46.9	13.927
22	22 27 13.04	2.2511	14 53 48.8	14.010
23	22 29 27.96	2.2463	S.14 39 45.7	14.092

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 31 42.59	2.2415	S.14 25 37.8	14.172
1	22 33 56.93	2.2367	14 11 25.2	14.250
2	22 36 10.99	2.2320	13 57 7.8	14.327
3	22 38 24.77	2.2273	13 42 45.8	14.403
4	22 40 38.27	2.2227	13 28 19.4	14.477
5	22 42 51.50	2.2182	13 13 48.6	14.549
6	22 45 4.46	2.2137	12 59 13.5	14.619
7	22 47 17.15	2.2093	12 44 34.3	14.688
8	22 49 29.58	2.2050	12 29 50.9	14.756
9	22 51 41.75	2.2007	12 15 3.5	14.822
10	22 53 53.67	2.1965	12 0 12.2	14.886
11	22 56 5.34	2.1924	11 45 17.1	14.949
12	22 58 16.76	2.1883	11 30 18.3	15.010
13	23 0 27.94	2.1843	11 15 15.9	15.070
14	23 2 38.87	2.1804	11 0 9.9	15.128
15	23 4 49.57	2.1765	10 45 0.5	15.184
16	23 7 0.05	2.1727	10 29 47.8	15.239
17	23 9 10.30	2.1690	10 14 31.8	15.293
18	23 11 20.33	2.1654	9 59 12.7	15.345
19	23 13 30.14	2.1618	9 43 50.5	15.395
20	23 15 39.74	2.1583	9 28 25.3	15.444
21	23 17 49.13	2.1548	9 12 57.2	15.491
22	23 19 58.32	2.1515	8 57 26.4	15.537
23	23 22 7.31	2.1483	8 41 52.8	15.582
24	23 24 16.11	2.1451	S. 8 26 16.6	15.624

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 24 16.11	2.1451	S. 8 26 16.6	15.624
1	23 26 24.72	2.1419	8 10 37.9	15.665
2	23 28 33.14	2.1389	7 54 56.8	15.705
3	23 30 41.39	2.1360	7 39 13.3	15.743
4	23 32 49.46	2.1331	7 23 27.6	15.780
5	23 34 57.36	2.1303	7 7 39.7	15.815
6	23 37 5.10	2.1276	6 51 49.8	15.849
7	23 39 12.68	2.1250	6 35 57.9	15.881
8	23 41 20.10	2.1225	6 20 4.1	15.912
9	23 43 27.37	2.1200	6 4 8.5	15.942
10	23 45 34.50	2.1176	5 48 11.1	15.970
11	23 47 41.49	2.1154	5 32 12.1	15.996
12	23 49 48.35	2.1132	5 16 11.6	16.021
13	23 51 55.08	2.1111	5 0 9.6	16.044
14	23 54 1.68	2.1091	4 44 6.3	16.066
15	23 56 8.16	2.1071	4 28 1.7	16.087
16	23 58 14.53	2.1052	4 11 55.9	16.106
17	0 0 20.79	2.1034	3 55 49.0	16.124
18	0 2 26.94	2.1017	3 39 41.0	16.140
19	0 4 32.99	2.1002	3 23 32.1	16.155
20	0 6 38.96	2.0987	3 7 22.4	16.169
21	0 8 44.84	2.0973	2 51 11.9	16.181
22	0 10 50.64	2.0960	2 35 0.7	16.191
23	0 12 56.36	2.0947	S. 2 18 48.9	16.200

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 15 2.01	2.0935	S. 2 2 36.7	16.208
1	0 17 7.59	2.0925	1 46 24.0	16.215
2	0 19 13.11	2.0916	1 30 10.9	16.220
3	0 21 18.57	2.0907	1 13 57.6	16.223
4	0 23 23.99	2.0899	0 57 44.1	16.226
5	0 25 29.36	2.0892	0 41 30.5	16.227
6	0 27 34.69	2.0886	0 25 16.9	16.226
7	0 29 39.98	2.0880	S. 0 9 3.4	16.223
8	0 31 45.25	2.0875	N. 0 7 9.9	16.220
9	0 33 50.49	2.0872	0 23 23.0	16.216
10	0 35 55.71	2.0869	0 39 35.8	16.210
11	0 38 0.91	2.0867	0 55 48.2	16.203
12	0 40 6.11	2.0866	1 12 0.1	16.194
13	0 42 11.30	2.0866	1 28 11.4	16.183
14	0 44 16.50	2.0867	1 44 22.1	16.171
15	0 46 21.71	2.0868	2 0 32.0	16.158
16	0 48 26.92	2.0870	2 16 41.1	16.144
17	0 50 32.15	2.0874	2 32 49.3	16.128
18	0 52 37.41	2.0878	2 48 56.5	16.111
19	0 54 42.69	2.0883	3 5 2.6	16.092
20	0 56 48.01	2.0889	3 21 7.6	16.072
21	0 58 53.37	2.0897	3 37 11.3	16.051
22	1 0 58.77	2.0905	3 53 13.7	16.028
23	1 3 4.22	2.0913	4 9 14.7	16.004
24	1 5 9.72	2.0922	N. 4 25 14.2	15.979

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 5 9.72	2.0922	N. 4 25 14.2	15.979
1	1 7 15.28	2.0932	4 41 12.2	15.952
2	1 9 20.91	2.0943	4 57 8.5	15.924
3	1 11 26.61	2.0955	5 13 3.1	15.894
4	1 13 32.37	2.0968	5 28 55.8	15.863
5	1 15 38.21	2.0981	5 44 46.6	15.831
6	1 17 44.14	2.0995	6 0 35.5	15.798
7	1 19 50.16	2.1011	6 16 22.3	15.763
8	1 21 56.27	2.1027	6 32 7.0	15.726
9	1 24 2.48	2.1043	6 47 49.5	15.688
10	1 26 8.79	2.1060	7 3 29.6	15.649
11	1 28 15.21	2.1079	7 19 7.3	15.608
12	1 30 21.74	2.1098	7 34 42.6	15.566
13	1 32 28.39	2.1118	7 50 15.3	15.523
14	1 34 35.16	2.1139	8 5 45.4	15.479
15	1 36 42.06	2.1161	8 21 12.8	15.433
16	1 38 49.09	2.1183	8 36 37.4	15.386
17	1 40 56.26	2.1206	8 51 59.1	15.337
18	1 43 3.56	2.1230	9 7 17.8	15.286
19	1 45 11.01	2.1254	9 22 33.4	15.234
20	1 47 18.61	2.1279	9 37 45.9	15.181
21	1 49 26.36	2.1305	9 52 55.2	15.128
22	1 51 34.27	2.1331	10 8 1.3	15.073
23	1 53 42.34	2.1358	N.10 23 4.0	15.017

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 55 50.57	2.1386	N.10 38 3.3	14.958
1	1 57 58.97	2.1415	10 52 59.0	14.898
2	2 0 7.55	2.1444	11 7 51.0	14.836
3	2 2 16.31	2.1474	11 22 39.3	14.773
4	2 4 25.24	2.1505	11 37 23.8	14.709
5	2 6 34.36	2.1537	11 52 4.4	14.644
6	2 8 43.68	2.1569	12 6 41.1	14.577
7	2 10 53.19	2.1601	12 21 13.7	14.509
8	2 13 2.89	2.1634	12 35 42.2	14.440
9	2 15 12.79	2.1668	12 50 6.5	14.369
10	2 17 22.90	2.1702	13 4 26.5	14.297
11	2 19 33.22	2.1737	13 18 42.1	14.223
12	2 21 43.75	2.1772	13 32 53.2	14.148
13	2 23 54.49	2.1808	13 46 59.8	14.072
14	2 26 5.45	2.1845	14 1 1.8	13.994
15	2 28 16.63	2.1882	14 14 59.1	13.914
16	2 30 28.04	2.1920	14 28 51.5	13.833
17	2 32 39.67	2.1958	14 42 39.1	13.752
18	2 34 51.53	2.1996	14 56 21.7	13.669
19	2 37 3.62	2.2035	15 9 59.3	13.584
20	2 39 15.95	2.2074	15 23 31.8	13.498
21	2 41 28.51	2.2114	15 36 59.1	13.410
22	2 43 41.32	2.2154	15 50 21.0	13.321
23	2 45 54.37	2.2195	16 3 37.6	13.231
24	2 48 7.66	2.2236	N.16 16 48.7	13.140

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 48 7.66	2.2236	N.16 16 48.7	13.140
1	2 50 21.20	2.2278	16 29 54.3	13.047
2	2 52 34.99	2.2320	16 42 54.3	12.953
3	2 54 49.03	2.2362	16 55 48.6	12.857
4	2 57 3.33	2.2404	17 8 37.1	12.759
5	2 59 17.88	2.2446	17 21 19.7	12.660
6	3 1 32.68	2.2489	17 33 56.3	12.560
7	3 3 47.74	2.2532	17 46 26.9	12.459
8	3 6 3.06	2.2575	17 58 51.4	12.357
9	3 8 18.64	2.2619	18 11 9.7	12.253
10	3 10 34.49	2.2663	18 23 21.7	12.147
11	3 12 50.60	2.2707	18 35 27.3	12.040
12	3 15 6.97	2.2751	18 47 26.5	11.932
13	3 17 23.61	2.2795	18 59 19.2	11.823
14	3 19 40.51	2.2839	19 11 5.3	11.712
15	3 21 57.68	2.2883	19 22 44.7	11.600
16	3 24 15.11	2.2927	19 34 17.3	11.487
17	3 26 32.81	2.2972	19 45 43.1	11.372
18	3 28 50.77	2.3016	19 57 2.0	11.256
19	3 31 9.00	2.3061	20 8 13.9	11.140
20	3 33 27.50	2.3105	20 19 18.8	11.022
21	3 35 46.26	2.3149	20 30 16.5	10.901
22	3 38 5.29	2.3193	20 41 6.9	10.780
23	3 40 24.59	2.3238	N.20 51 50.0	10.658

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 42 44.15	2.3282	N.21 2 25.8	10.534
1	3 45 3.97	2.3326	21 12 54.1	10.409
2	3 47 24.06	2.3370	21 23 14.9	10.283
3	3 49 44.41	2.3413	21 33 28.1	10.156
4	3 52 5.01	2.3456	21 43 33.6	10.028
5	3 54 25.87	2.3499	21 53 31.4	9.898
6	3 56 47.00	2.3542	22 3 21.4	9.767
7	3 59 8.38	2.3584	22 13 3.5	9.635
8	4 1 30.01	2.3626	22 22 37.6	9.502
9	4 3 51.89	2.3667	22 32 3.7	9.368
10	4 6 14.02	2.3708	22 41 21.7	9.233
11	4 8 36.39	2.3749	22 50 31.6	9.096
12	4 10 59.01	2.3790	22 59 33.2	8.958
13	4 13 21.87	2.3830	23 8 26.5	8.819
14	4 15 44.97	2.3869	23 17 11.5	8.679
15	4 18 8.30	2.3908	23 25 48.1	8.538
16	4 20 31.87	2.3946	23 34 16.1	8.396
17	4 22 55.66	2.3984	23 42 35.6	8.254
18	4 25 19.68	2.4021	23 50 46.6	8.110
19	4 27 43.92	2.4058	23 58 48.9	7.965
20	4 30 8.37	2.4094	24 6 42.4	7.819
21	4 32 33.04	2.4129	24 14 27.1	7.672
22	4 34 57.92	2.4164	24 22 3.0	7.524
23	4 37 23.00	2.4198	24 29 30.0	7.375
24	4 39 48.29	2.4231	N.24 36 48.0	7.225

WEDNESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 39 48.29	2.4231	N.24 36 48.0	7.225
1	4 42 13.77	2.4263	24 43 57.0	7.075
2	4 44 39.44	2.4294	24 50 57.0	6.924
3	4 47 5.29	2.4324	24 57 47.9	6.772
4	4 49 31.33	2.4354	25 4 29.6	6.618
5	4 51 57.54	2.4383	25 11 2.1	6.464
6	4 54 23.93	2.4411	25 17 25.3	6.310
7	4 56 50.48	2.4438	25 23 39.2	6.155
8	4 59 17.19	2.4464	25 29 43.9	5.999
9	5 1 44.05	2.4489	25 35 39.2	5.843
10	5 4 11.06	2.4513	25 41 25.0	5.686
11	5 6 38.21	2.4537	25 47 1.4	5.528
12	5 9 5.50	2.4559	25 52 28.3	5.369
13	5 11 32.92	2.4580	25 57 45.6	5.209
14	5 14 0.46	2.4600	26 2 53.4	5.050
15	5 16 28.12	2.4619	26 7 51.6	4.890
16	5 18 55.89	2.4637	26 12 40.2	4.729
17	5 21 23.76	2.4653	26 17 19.1	4.568
18	5 23 51.73	2.4668	26 21 48.4	4.406
19	5 26 19.79	2.4683	26 26 7.9	4.244
20	5 28 47.93	2.4696	26 30 17.7	4.082
21	5 31 16.15	2.4708	26 34 17.8	3.920
22	5 33 44.43	2.4719	26 38 8.1	3.757
23	5 36 12.77	2.4728	N.26 41 48.6	3.593

THURSDAY, JANUARY 1, 1874.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 38 41.17	2.4736	N.26 45 19.3	3.429

PHASES OF THE MOON.

		d	h	m
○	Full Moon, . . .	3	16	20.6
☾	Last Quarter, . .	11	9	54.0
●	New Moon, . .	19	6	49.4
☽	First Quarter, . .	26	4	4.7

		d	h
☾	Apogee, ...	11	17.1
☾	Perigee, ...	24	9.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Saturn	W.	95° 21′ 24″	2292	97° 7′ 35″	2296	98° 53′ 41″	2299	100° 39′ 42″	2304
	α Aquilæ	W.	94 22 39	3091	95 50 59	3101	97 19 8	3110	98 47 5	3123
	Mars	W.	88 5 3	2499	89 46 17	2503	91 27 26	2507	93 8 29	2511
	Fomalhaut	W.	64 0 56	2465	65 42 59	2462	67 25 6	2460	69 7 16	2460
	α Pegasi	W.	46 36 28	3011	48 6 27	2973	49 37 14	2939	51 8 43	2909
	Pollux	E.	77 12 15	2253	75 25 6	2256	73 38 1	2260	71 51 2	2264
	Regulus	E.	113 36 6	2268	111 49 19	2270	110 2 35	2273	108 15 56	2277
2	Mars	W.	101 32 7	2539	103 12 26	2545	104 52 36	2553	106 32 35	2561
	Fomalhaut	W.	77 37 54	2468	79 19 52	2473	81 1 43	2478	82 43 27	2483
	α Pegasi	W.	58 54 7	2811	60 28 21	2800	62 2 49	2790	63 37 30	2782
	Pollux	E.	62 57 48	2290	61 11 34	2296	59 25 29	2303	57 39 34	2311
	Regulus	E.	99 24 13	2301	97 38 15	2308	95 52 27	2315	94 6 49	2322
3	Mars	W.	114 49 36	2607	116 28 22	2618	118 6 53	2629	119 45 9	2640
	Fomalhaut	W.	91 9 46	2524	92 50 26	2534	94 30 52	2545	96 11 3	2556
	α Pegasi	W.	71 32 40	2769	73 7 48	2772	74 42 53	2774	76 17 55	2779
	α Arietis	W.	27 55 20	2701	29 31 58	2676	31 9 10	2656	32 46 49	2640
	Pollux	E.	48 52 54	2353	47 8 12	2364	45 23 45	2373	43 39 32	2384
	Regulus	E.	85 21 25	2364	83 36 58	2373	81 52 45	2383	80 8 46	2394
	Jupiter	E.	116 9 32	2394	114 25 48	2403	112 42 17	2412	110 59 0	2422
4	α Pegasi	W.	84 11 9	2817	85 45 15	2827	87 19 8	2838	88 52 46	2850
	α Arietis	W.	40 58 43	2612	42 37 22	2612	44 16 0	2615	45 54 34	2621
	Pollux	E.	35 2 26	2443	33 19 52	2456	31 37 37	2470	29 55 41	2483
	Regulus	E.	71 32 47	2451	69 50 25	2464	68 8 21	2477	66 26 35	2489
	Jupiter	E.	102 26 21	2478	100 44 37	2491	99 3 11	2503	97 22 2	2516
5	α Pegasi	W.	96 36 40	2924	98 8 28	2942	99 39 54	2959	101 10 58	2978
	α Arietis	W.	54 5 29	2655	55 43 9	2665	57 20 36	2675	58 57 50	2685
	Aldebaran	W.	23 51 29	2763	25 26 46	2753	27 2 15	2747	28 37 53	2742
	Regulus	E.	58 2 30	2560	56 22 40	2574	54 43 10	2590	53 4 1	2605
	Jupiter	E.	89 0 49	2583	87 21 30	2597	85 42 31	2611	84 3 51	2626
	Spica	E.	112 4 49	2552	110 24 48	2566	108 45 7	2580	107 5 45	2594
6	α Arietis	W.	67 0 16	2744	68 35 57	2757	70 11 21	2769	71 46 29	2783
	Aldebaran	W.	36 36 14	2758	38 11 37	2766	39 46 50	2774	41 21 52	2783
	Regulus	E.	44 53 31	2684	43 16 29	2701	41 39 50	2717	40 3 33	2734
	Jupiter	E.	75 55 26	2698	74 18 44	2713	72 42 21	2728	71 6 18	2742
	Spica	E.	98 53 44	2666	97 16 18	2681	95 39 12	2695	94 2 26	2710
7	α Arietis	W.	79 37 49	2848	81 11 14	2862	82 44 21	2876	84 17 11	2890
	Aldebaran	W.	49 13 51	2835	50 47 33	2846	52 21 1	2857	53 54 15	2869
	Regulus	E.	32 7 48	2822	30 33 49	2842	29 0 16	2862	27 27 9	2883
	Jupiter	E.	63 10 52	2815	61 36 44	2829	60 2 54	2843	58 29 22	2857
	Spica	E.	86 3 22	2782	84 28 30	2795	82 53 56	2810	81 19 41	2823
8	α Arietis	W.	91 57 8	2954	93 28 19	2966	94 59 14	2979	96 29 53	2991
	Aldebaran	W.	61 36 43	2926	63 8 29	2937	64 40 1	2947	66 11 20	2958
	Jupiter	E.	50 46 6	2924	49 14 18	2936	47 42 45	2949	46 11 28	2961
	Spica	E.	73 32 46	2889	72 0 13	2902	70 27 57	2914	68 55 56	2926
	Sun	E.	127 32 53	3256	126 7 50	3270	124 43 3	3282	123 18 31	3294
9	Aldebaran	W.	73 44 39	3008	75 14 42	3017	76 44 34	3026	78 14 15	3034
	Pollux	W.	29 30 32	2977	31 1 14	2985	32 31 46	2993	34 2 7	3002

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Saturn	W.	102° 25′ 36″	2308	104° 11′ 24″	2313	105° 57′ 4″	2319	107° 42′ 36″	2324
	α Aquilæ	W.	100 14 47	3137	101 42 12	3153	103 9 18	3171	104 36 2	3192
	Mars	W.	94 49 27	2516	96 30 18	2521	98 11 2	2526	99 51 39	2533
	Fomalhaut	W.	70 49 26	2460	72 31 36	2460	74 13 45	2462	75 55 51	2465
	α Pegasi	W.	52 40 50	2883	54 13 30	2862	55 46 38	2842	57 20 11	2825
	Pollux	E.	70 4 9	2268	68 17 23	2272	66 30 43	2278	64 44 11	2284
	Regulus	E.	106 29 22	2281	104 42 54	2285	102 56 33	2290	101 10 19	2296
2	Mars	W.	108 12 23	2570	109 51 59	2578	111 31 24	2587	113 10 37	2597
	Fomalhaut	W.	84 25 4	2489	86 6 32	2498	87 47 48	2506	89 28 53	2515
	α Pegasi	W.	65 12 22	2776	66 47 21	2772	68 22 25	2770	69 57 32	2769
	Pollux	E.	55 53 51	2319	54 8 19	2326	52 22 58	2335	50 37 49	2344
	Regulus	E.	92 21 21	2329	90 36 4	2337	88 50 59	2346	87 6 6	2354
3	Mars	W.	121 23 10	2652	123 0 55	2663	124 38 24	2676	126 15 36	2689
	Fomalhaut	W.	97 50 59	2568	99 30 38	2581	101 9 59	2595	102 49 1	2609
	α Pegasi	W.	77 52 51	2784	79 27 40	2791	81 2 20	2798	82 36 50	2807
	α Arietis	W.	34 24 49	2629	36 3 5	2621	37 41 31	2615	39 20 5	2612
	Pollux	E.	41 55 34	2395	40 11 52	2406	38 28 26	2418	36 45 17	2431
	Regulus	E.	78 25 2	2404	76 41 33	2416	74 58 21	2428	73 15 26	2439
	Jupiter	E.	109 15 57	2433	107 33 9	2444	105 50 37	2455	104 8 21	2467
4	α Pegasi	W.	90 26 9	2863	·91 59 15	2878	93 32 2	2892	95 4 31	2908
	α Arietis	W.	47 33 1	2626	49 11 21	2631	50 49 34	2638	52 27 37	2646
	Pollux	E.	28 14 4	2497	26 32 47	2512	24 51 50	2527	23 11 14	2542
	Regulus	E.	64 45 7	2503	63 3 58	2517	61 23 9	2532	59 42 40	2545
	Jupiter	E.	95 41 11	2529	94 0 38	2542	92 20 23	2556	90 40 27	2569
5	α Pegasi	W.	102 41 38	2997	104 11 54	3018	105 41 45	3039	107 11 10	3061
	α Arietis	W.	60 34 50	2696	62 11 35	2707	63 48 5	2719	65 24 19	2732
	Aldebaran	W.	30 13 37	2741	31 49 22	2744	33 25 4	2747	35 0 42	2751
	Regulus	E.	51 25 13	2620	49 46 45	2636	48 8 39	2652	46 30 54	2668
	Jupiter	E.	82 25 31	2640	80 47 30	2655	79 9 49	2669	77 32 28	2684
	Spica	E.	105 26 42	2608	103 47 58	2623	102 9 34	2637	100 31 29	2652
6	α Arietis	W.	73 21 19	2796	74 55 52	2809	76 30 8	2822	78 4 7	2835
	Aldebaran	W.	42 56 42	2793	44 31 19	2802	46 5 44	2813	47 39 55	2825
	Regulus	E.	38 27 38	2751	36 52 6	2769	35 16 57	2786	33 42 11	2804
	Jupiter	E.	69 30 34	2757	67 55 10	2772	66 20 5	2786	64 45 19	2801
	Spica	E.	92 25 59	2724	90 49 51	2739	89 14 3	2753	87 38 33	2767
7	α Arietis	W.	85 49 43	2902	87 21 59	2916	88 53 58	2928	90 25 41	2941
	Aldebaran	W.	55 27 14	2880	56 59 58	2891	58 32 28	2903	60 4 43	2915
	Regulus	E.	25 54 28	2905	24 22 15	2929	22 50 33	2954	21 19 22	2978
	Jupiter	E.	56 56 8	2871	55 23 12	2884	53 50 33	2898	52 18 11	2911
	Spica	E.	79 45 43	2837	78 12 3	2851	76 38 41	2863	75 5 35	2876
8	α Arietis	W.	98 0 17	3003	99 30 26	3015	101 0 20	3026	102 30 0	3037
	Aldebaran	W.	67 42 25	2969	69 13 17	2978	70 43 57	2989	72 14 24	2998
	Jupiter	E.	44 40 26	2973	43 9 39	2984	41 39 6	2995	40 8 47	3006
	Spica	E.	67 24 10	2938	65 52 39	2949	64 21 22	2960	62 50 19	2971
	Sun	E.	121 54 13	3306	120 30 9	3319	119 6 20	3331	117 42 44	3342
9	Aldebaran	W.	79 43 46	3042	81 13 7	3050	82 42 18	3056	84 11 21	3064
	Pollux	W.	35 32 17	3010	37 2 17	3017	38 32 9	3024	40 1 52	3031

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
9	Jupiter	E.	38° 38′ 42″	3017	37° 8′ 50″	3027	35° 39′ 11″	3037	34° 9′ 44″	3047
	Spica	E.	61 19 30	2981	59 48 54	2991	58 18 30	3001	56 48 18	3010
	Sun	E.	116 19 21	3353	114 56 11	3363	113 33 12	3373	112 10 25	3382
10	Aldebaran	W.	85 40 15	3070	87 9 1	3076	88 37 40	3082	90 6 12	3087
	Pollux	W.	41 31 26	3038	43 0 52	3043	44 30 11	3048	45 59 24	3054
	Spica	E.	49 20 3	3052	47 50 54	3058	46 21 53	3065	44 53 1	3071
	Sun	E.	105 19 2	3424	103 57 13	3431	102 35 31	3437	101 13 56	3442
11	Aldebaran	W.	97 27 27	3106	98 55 29	3110	100 23 27	3112	101 51 22	3113
	Pollux	W.	53 24 6	3072	54 52 50	3073	56 21 32	3075	57 50 12	3077
	Spica	E.	37 30 26	3098	36 2 14	3102	34 34 7	3106	33 6 5	3111
	Sun	E.	94 27 25	3463	93 6 20	3466	91 45 18	3468	90 24 18	3470
12	Aldebaran	W.	109 10 42	3114	110 38 34	3114	112 6 26	3113	113 34 20	3111
	Pollux	W.	65 13 20	3075	66 42 0	3073	68 10 42	3071	69 39 27	3068
	Regulus	W.	29 3 1	3129	30 30 35	3123	31 58 17	3117	33 26 6	3110
	Sun	E.	83 39 32	3469	82 18 33	3467	80 57 32	3464	79 36 28	3462
13	Pollux	W.	77 4 16	3047	78 33 30	3042	80 2 51	3035	81 32 20	3029
	Regulus	W.	40 47 11	3077	42 15 49	3069	43 44 36	3061	45 13 33	3054
	Sun	E.	72 50 12	3440	71 28 41	3434	70 7 3	3428	68 45 18	3421
14	Pollux	W.	89 1 55	2991	90 32 19	2982	92 2 54	2973	93 33 41	2963
	Regulus	W.	52 40 48	3010	54 10 48	3000	55 41 1	2990	57 11 26	2980
	Jupiter	W.	20 37 0	3052	22 6 8	3040	23 35 31	3027	25 5 10	3015
	Sun	E.	61 54 27	3380	60 31 48	3372	59 8 59	3362	57 45 59	3351
15	Pollux	W.	101 10 47	2910	102 42 53	2898	104 15 14	2887	105 47 49	2875
	Regulus	W.	64 46 53	2925	66 18 40	2912	67 50 43	2901	69 23 1	2888
	Jupiter	W.	32 37 12	2954	34 8 23	2941	35 39 50	2928	37 11 33	2916
	Sun	E.	50 47 55	3296	49 23 39	3285	47 59 10	3272	46 34 26	3260
16	Regulus	W.	77 8 34	2824	78 42 31	2811	80 16 44	2798	81 51 15	2784
	Jupiter	W.	44 54 18	2848	46 27 43	2835	48 1 25	2821	49 35 25	2806
	Sun	E.	39 27 8	3198	38 0 56	3184	36 34 28	3172	35 7 45	3159
21	Sun	W.	22 24 52	2732	24 0 50	2719	25 37 5	2707	27 13 36	2696
	α Pegasi	E.	63 45 49	2831	62 12 1	2840	60 38 25	2852	59 5 4	2865
	α Arietis	E.	104 46 55	2428	103 4 0	2421	101 20 55	2414	99 37 40	2406
22	Sun	W.	35 19 20	2656	36 56 59	2650	38 34 46	2645	40 12 40	2640
	α Pegasi	E.	51 23 41	2973	49 52 54	3005	48 22 47	3040	46 53 24	3082
	α Arietis	E.	90 59 15	2380	89 15 12	2378	87 31 5	2374	85 46 53	2371
	Aldebaran	E.	121 22 12	2357	119 37 35	2351	117 52 50	2346	116 7 57	2342
23	Sun	W.	48 23 35	2623	50 1 59	2621	51 40 26	2618	53 18 56	2617
	Saturn	W.	19 12 47	2436	20 55 31	2417	22 38 42	2402	24 22 14	2389
	α Arietis	E.	77 5 1	2363	75 20 33	2362	73 36 4	2363	71 51 36	2364
	Aldebaran	E.	107 22 6	2324	105 36 42	2322	103 51 15	2320	102 5 45	2319
24	Sun	W.	61 31 49	2614	63 10 25	2613	64 49 2	2613	66 27 39	2615
	α Aquilæ	W.	47 22 15	4137	48 31 41	4036	49 42 45	3945	50 55 19	3862
	Saturn	W.	33 3 20	2356	34 47 58	2353	36 32 41	2350	38 17 28	2348
	α Arietis	E.	63 9 44	2374	61 25 32	2378	59 41 25	2382	57 57 24	2387

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Jupiter	E.	32 40 29	3056	31 11 26	3065	29 42 34	3074	28 13 53	3082
	Spica	E.	55 18 18	3019	53 48 29	3027	52 18 50	3035	50 49 21	3044
	Sun	E.	110 47 48	3392	109 25 22	3400	108 3 6	3409	106 41 0	3416
10	Aldebaran	W.	91 34 38	3091	93 2 58	3096	94 31 12	3101	95 59 21	3105
	Pollux	W.	47 28 30	3058	48 57 31	3062	50 26 27	3066	51 55 18	3069
	Spica	E.	43 24 16	3077	41 55 38	3083	40 27 8	3088	38 58 44	3093
	Sun	E.	99 52 27	3447	98 31 4	3452	97 9 46	3456	95 48 33	3461
11	Aldebaran	W.	103 19 16	3114	104 47 8	3114	106 15 0	3115	107 42 51	3115
	Pollux	W.	59 18 50	3078	60 47 27	3078	62 16 4	3078	63 44 41	3076
	Spica	E.	31 38 9	3115	30 10 18	3119	28 42 31	3123	27 14 49	3127
	Sun	E.	89 3 20	3471	87 42 23	3471	86 21 26	3471	85 0 29	3471
12	Aldebaran	W.	115 2 16	3110	116 30 14	3106	117 58 16	3104	119 26 21	3101
	Pollux	W	71 8 16	3065	72 37 9	3061	74 6 6	3057	75 35 8	3053
	Regulus	W.	34 54 3	3104	36 22 8	3097	37 50 21	3091	39 18 42	3084
	Sun	E.	78 15 21	3458	76 54 10	3455	75 32 56	3451	74 11 37	3446
13	Pollux	W.	83 1 57	3022	84 31 43	3015	86 1 37	3007	87 31 41	2999
	Regulus	W.	46 42 39	3046	48 11 55	3037	49 41 22	3029	51 10 59	3019
	Sun	E.	67 23 25	3414	66 1 24	3406	64 39 14	3398	63 16 55	3390
14	Pollux	W.	95 4 40	2953	96 35 52	2942	98 7 17	2932	99 38 55	2921
	Regulus	W.	58 42 4	2969	60 12 56	2958	61 44 1	2947	63 15 20	2936
	Jupiter	W.	26 35 4	3004	28 5 13	2991	29 35 37	2978	31 6 17	2966
	Sun	E.	56 22 47	3341	54 59 23	3330	53 35 46	3319	52 11 57	3308
15	Pollux	W.	107 20 40	2863	108 53 46	2851	110 27 8	2838	112 0 47	2825
	Regulus	W.	70 55 35	2876	72 28 25	2863	74 1 31	2850	75 34 54	2837
	Jupiter	W.	38 43 32	2902	40 15 48	2889	41 48 21	2876	43 21 11	2862
	Sun	E.	45 9 28	3248	43 44 16	3235	42 18 48	3222	40 53 5	3210
16	Regulus	W.	83 26 4	2771	85 1 10	2757	86 36 34	2744	88 12 16	2730
	Jupiter	W.	51 9 43	2794	52 44 19	2779	54 19 14	2766	55 54 27	2752
	Sun	E.	33 40 47	3147	32 13 34	3135	30 46 7	3123	29 18 25	3111
21	Sun	W.	28 50 21	2687	30 27 19	2678	32 4 29	2669	33 41 50	2660
	α Pegasi	E.	57 32 0	2880	55 59 16	2899	54 26 56	2920	52 55 3	2945
	α Arietis	E.	97 54 16	2401	96 10 43	2395	94 27 1	2390	92 43 12	2384
22	Sun	W.	41 50 40	2626	43 28 46	2632	45 6 58	2628	46 45 15	2626
	α Pegasi	E.	45 24 52	3129	43 57 17	3181	42 30 45	3242	41 5 25	3311
	α Arietis	E.	84 2 36	2368	82 18 16	2366	80 33 53	2365	78 49 28	2364
	Aldebaran	E.	114 22 58	2337	112 37 53	2333	110 52 42	2330	109 7 26	2327
23	Sun	W.	54 57 28	2615	56 36 2	2615	58 14 37	2614	59 53 13	2614
	Saturn	W.	26 6 4	2380	27 50 8	2372	29 34 23	2365	31 18 48	2360
	α Arietis	E.	70 7 9	2365	68 22 44	2366	66 38 21	2368	64 54 1	2371
	Aldebaran	E.	100 20 13	2318	98 34 40	2317	96 49 5	2316	95 3 29	2316
24	Sun	W.	68 6 14	2615	69 44 48	2616	71 23 21	2618	73 1 52	2618
	α Aquilæ	W.	52 9 17	3788	53 24 32	3719	54 40 59	3657	55 58 32	3602
	Saturn	W.	40 2 18	2346	41 47 10	2345	43 32 4	2345	45 16 58	2344
	α Arietis	E.	56 13 31	2392	54 29 45	2398	52 46 8	2405	51 2 40	2412

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	Aldebaran	E.	93° 17′ 53″	2316	91° 32′ 17″	2316	89° 46′ 41″	2317	88° 1′ 6″	2317
25	Sun	W.	74 40 22	2621	76 18 49	2622	77 57 14	2624	79 35 36	2626
	α Aquilæ	W.	57 17 4	3552	58 36 31	3505	59 56 50	3463	61 17 55	3427
	Saturn	W.	47 1 53	2344	48 46 48	2345	50 31 42	2345	52 16 36	2346
	Mars	W.	23 46 54	2588	25 26 6	2584	27 5 23	2580	28 44 45	2577
	α Arietis	E.	49 19 23	2421	47 36 18	2431	45 53 27	2441	44 10 51	2453
	Aldebaran	E.	79 13 35	2325	77 28 12	2327	75 42 52	2330	73 57 36	2333
26	Sun	W.	87 46 43	2638	89 24 46	2641	91 2 45	2644	92 40 40	2648
	α Aquilæ	W.	68 12 39	3288	69 37 5	3266	71 1 56	3249	72 27 7	3234
	Saturn	W.	61 0 36	2354	62 45 17	2357	64 29 54	2359	66 14 28	2362
	Mars	W.	37 2 12	2574	38 41 42	2575	40 21 11	2577	42 0 38	2577
	Fomalhaut	W.	34 36 22	2880	36 9 7	2837	37 42 47	2798	39 17 17	2765
	Aldebaran	E.	65 12 21	2349	63 27 33	2353	61 42 51	2358	59 58 16	2362
	Pollux	E.	109 5 29	2306	107 19 38	2307	105 33 49	2310	103 48 4	2313
27	Sun	W.	100 49 6	2665	102 26 33	2669	104 3 54	2673	105 41 10	2677
	α Aquilæ	W.	79 36 50	3184	81 3 18	3180	82 29 51	3176	83 56 29	3173
	Saturn	W.	74 56 21	2375	76 40 31	2378	78 24 37	2382	80 8 38	2385
	Mars	W.	50 17 18	2589	51 56 28	2592	53 35 34	2595	55 14 36	2598
	Fomalhaut	W.	47 18 55	2657	48 56 33	2643	50 34 30	2631	52 12 43	2621
	Aldebaran	E.	51 17 7	2390	49 33 18	2398	47 49 40	2405	46 6 12	2412
	Pollux	E.	95 0 26	2328	93 15 8	2332	91 29 55	2335	89 44 47	2339
28	Sun	W.	113 46 5	2700	115 22 45	2704	116 59 19	2710	118 35 46	2715
	α Aquilæ	W.	91 9 40	3186	92 36 6	3192	94 2 25	3199	95 28 35	3209
	Saturn	W.	88 47 24	2405	90 30 52	2409	92 14 14	2413	93 57 30	2417
	Mars	W.	63 28 37	2616	65 7 10	2621	66 45 37	2624	68 23 59	2629
	Fomalhaut	W.	60 26 40	2589	62 5 50	2586	63 45 4	2583	65 24 22	2582
	α Pegasi	W.	43 23 28	3213	44 49 22	3165	46 16 13	3124	47 43 54	3087
	Aldebaran	E.	37 32 1	2464	35 49 57	2478	34 8 13	2493	32 26 50	2510
	Pollux	E.	81 0 27	2358	79 15 52	2363	77 31 24	2367	75 47 2	2371
	Regulus	E.	117 24 34	2373	115 40 20	2376	113 56 11	2380	112 12 8	2384
29	Sun	W.	126 36 11	2744	128 11 52	2750	129 47 25	2757	131 22 49	2764
	Saturn	W.	102 32 10	2443	104 14 44	2448	105 57 11	2453	107 39 30	2459
	Mars	W.	76 34 15	2653	78 11 58	2658	79 49 34	2664	81 27 2	2669
	Fomalhaut	W.	73 41 5	2584	75 20 22	2586	76 59 36	2588	78 38 47	2592
	α Pegasi	W.	55 11 55	2959	56 42 59	2942	58 14 24	2937	59 46 8	2915
	Pollux	E.	67 6 49	2395	65 23 7	2401	63 39 33	2406	61 56 7	2411
	Regulus	E.	103 33 21	2406	101 49 55	2412	100 6 37	2417	98 23 26	2422
30	Mars	W.	89 32 27	2700	91 9 7	2707	92 45 38	2714	94 21 59	2721
	Fomalhaut	W.	86 53 20	2615	88 31 54	2621	90 10 20	2628	91 48 37	2635
	α Pegasi	W.	67 28 7	2876	69 0 57	2872	70 33 52	2869	72 6 50	2869
	Pollux	E.	53 20 57	2441	51 38 21	2448	49 55 55	2455	48 13 38	2462
	Regulus	E.	89 49 27	2451	88 7 5	2457	86 24 51	2464	84 42 47	2470
31	Mars	W.	102 21 20	2760	103 56 41	2768	105 31 51	2776	107 6 50	2785
	Fomalhaut	W.	99 57 26	2678	101 34 36	2688	103 11 32	2698	104 48 14	2710
	α Pegasi	W.	79 51 38	2876	81 24 27	2880	82 57 11	2886	84 29 48	2891
	α Arietis	W.	36 28 11	2704	38 4 46	2695	39 41 32	2690	41 18 25	2687
	Pollux	E.	39 44 46	2499	38 3 32	2508	36 22 30	2516	34 41 39	2525
	Regulus	E.	76 14 54	2507	74 33 51	2515	72 52 59	2523	71 12 18	2532

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
24	Aldebaran	E.	86 15 32	2319	84 30 0	2320	82 44 29	2321	80 59 0	2324
25	Sun	W.	81 13 56	2628	82 52 13	2631	84 30 26	2633	86 8 36	2635
	α Aquilæ	W.	62 39 41	3393	64 2 5	3361	65 25 6	3333	66 48 39	3310
	Saturn	W.	54 1 28	2347	55 46 19	2349	57 31 7	2350	59 15 53	2353
	Mars	W.	30 24 11	2575	32 3 40	2574	33 43 10	2574	35 22 41	2574
	α Arietis	E.	42 28 32	2467	40 46 32	2482	39 4 53	2499	37 23 38	2519
	Aldebaran	E.	72 12 24	2335	70 27 16	2339	68 42 13	2342	66 57 15	2345
26	Sun	W.	94 18 30	2651	95 56 16	2655	97 33 57	2657	99 11 34	2661
	α Aquilæ	W.	73 52 36	3220	75 18 21	3209	76 44 20	3199	78 10 30	3191
	Saturn	W.	67 58 58	2364	69 43 25	2366	71 27 48	2369	73 12 7	2373
	Mars	W.	43 40 4	2580	45 19 27	2582	46 58 47	2584	48 38 4	2586
	Fomalhaut	W.	40 52 31	2737	42 28 22	2712	44 4 46	2691	45 41 38	2672
	Aldebaran	E.	58 13 47	2367	56 29 25	2373	54 45 11	2378	53 1 5	2384
	Pollux	E.	102 2 24	2316	100 16 48	2319	98 31 16	2322	96 45 49	2325
27	Sun	W.	107 18 21	2681	108 55 26	2686	110 32 25	2690	112 9 18	2695
	α Aquilæ	W.	85 23 10	3173	86 49 51	3174	88 16 31	3177	89 43 8	3181
	Saturn	W.	81 52 34	2389	83 36 25	2393	85 20 10	2396	87 3 50	2401
	Mars	W.	56 53 34	2601	58 32 28	2605	60 11 16	2609	61 49 59	2612
	Fomalhaut	W.	53 51 10	2612	55 29 49	2604	57 8 38	2599	58 47 35	2593
	Aldebaran	E.	44 22 55	2421	42 39 50	2431	40 56 59	2441	39 14 22	2452
	Pollux	E.	87 59 44	2342	86 14 46	2346	84 29 54	2350	82 45 8	2354
28	Sun	W.	120 12 6	2720	121 48 19	2726	123 24 24	2732	125 0 22	2738
	α Aquilæ	W.	96 54 33	3220	98 20 18	3231	99 45 50	3245	101 11 6	3261
	Saturn	W.	95 40 40	2422	97 23 43	2427	99 6 39	2432	100 49 28	2437
	Mars	W.	70 2 15	2633	71 40 25	2638	73 18 28	2643	74 56 25	2648
	Fomalhaut	W.	67 3 42	2581	68 43 3	2580	70 22 25	2581	72 1 46	2583
	α Pegasi	W.	49 12 19	3055	50 41 24	3026	52 11 4	3001	53 41 15	2978
	Aldebaran	E.	30 45 51	2530	29 5 20	2553	27 25 20	2578	25 45 56	2610
	Pollux	E.	74 2 46	2376	72 18 37	2380	70 34 34	2385	68 50 38	2390
	Regulus	E.	110 28 10	2388	108 44 18	2393	107 0 33	2397	105 16 54	2401
29	Sun	W.	132 58 4	2771	134 33 16	2778	136 8 7	2785	137 42 55	2792
	Saturn	W.	109 21 41	2465	111 3 43	2471	112 45 37	2477	114 27 22	2483
	Mars	W.	83 4 23	2675	84 41 36	2681	86 18 41	2687	87 55 38	2693
	Fomalhaut	W.	80 17 53	2596	81 56 54	2600	83 35 49	2604	85 14 38	2610
	α Pegasi	W.	61 18 8	2904	62 50 22	2894	64 22 48	2887	65 55 24	2881
	Pollux	E.	60 12 48	2417	58 29 37	2423	56 46 35	2429	55 3 42	2435
	Regulus	E.	96 40 22	2427	94 57 26	2433	93 14 38	2438	91 31 58	2445
30	Mars	W.	95 58 11	2729	97 34 13	2735	99 10 6	2744	100 45 48	2751
	Fomalhaut	W.	93 26 45	2642	95 4 43	2651	96 42 29	2659	98 20 4	2669
	α Pegasi	W.	73 39 49	2868	75 12 49	2869	76 45 48	2870	78 18 45	2873
	Pollux	E.	46 31 31	2469	44 49 34	2476	43 7 47	2484	41 26 11	2492
	Regulus	E.	83 0 52	2477	81 19 7	2485	79 37 32	2492	77 56 8	2499
31	Mars	W.	108 41 57	2794	110 16 13	2804	111 50 36	2813	113 24 47	2822
	Fomalhaut	W.	106 24 41	2722	108 0 52	2733	109 36 48	2746	111 12 27	2760
	α Pegasi	W.	86 2 18	2898	87 34 39	2905	89 6 51	2914	90 38 52	2924
	α Arietis	W.	42 55 23	2681	44 32 24	2684	46 9 25	2685	47 46 25	2686
	Pollux	E.	33 1 1	2531	31 20 35	2543	29 40 22	2553	28 0 23	2564
	Regulus	E.	69 31 49	2540	67 51 32	2549	66 11 27	2559	64 31 35	2567

VENUS, 1873.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	21 40 1.37	11.624	−15 50 52.1	+62.54	2 55.3	1	23 52 52.23	+9.941	− 0 50 7.8	+77.62	3 5.8
2	21 44 39.53	11.558	15 25 38.4	63.56	2 56.0	2	23 56 50.31	9.899	− 0 19 4.9	77.61	3 5.9
3	21 49 16.14	11.493	15 0 1.6	64.50	2 56.7	3	0 0 47.39	9.858	+ 0 11 57.2	77.56	3 5.9
4	21 53 51.20	11.428	14 34 2.7	65.42	2 57.3	4	0 4 43.47	9.817	0 42 58.0	77.49	3 5.8
5	21 58 24.71	11.364	14 7 42.4	66.28	2 57.9	5	0 8 38.57	9.776	1 13 56.7	77.39	3 5.8
6	22 2 56.67	11.300	13 41 1.6	67.12	2 58.5	6	0 12 32.71	9.735	1 44 52.6	77.26	3 5.8
7	22 7 27.12	11.237	13 14 1.1	67.92	2 59.1	7	0 16 25.87	9.695	2 15 44.8	77.09	3 5.7
8	22 11 56.06	11.175	12 46 41.7	68.69	2 59.6	8	0 20 18.07	9.655	2 46 32.8	76.90	3 5.6
9	22 16 23.50	11.113	12 19 4.3	69.43	3 0.1	9	0 24 9.31	9.615	3 17 15.8	76.68	3 5.5
10	22 20 49.47	11.052	11 51 9.6	70.13	3 0.6	10	0 27 59.57	9.575	3 47 53.2	76.43	3 5.4
11	22 25 13.99	10.992	11 22 58.4	70.80	3 1.0	11	0 31 48.88	9.535	4 18 24.2	76.15	3 5.3
12	22 29 37.07	10.932	10 54 31.5	71.44	3 1.4	12	0 35 37.23	9.494	4 48 48.0	75.84	3 5.2
13	22 33 58.73	10.873	10 25 49.7	72.04	3 1.9	13	0 39 24.61	9.454	5 19 4.1	75.50	3 5.0
14	22 38 18.99	10.815	9 56 54.0	72.61	3 2.3	14	0 43 11.03	9.414	5 49 11.9	75.14	3 4.8
15	22 42 37.86	10.758	9 27 44.9	73.15	3 2.6	15	0 46 56.49	9.374	6 19 10.8	74.76	3 4.6
16	22 46 55.38	10.703	8 58 23.2	73.65	3 2.9	16	0 50 40.99	9.334	6 49 0.0	74.34	3 4.4
17	22 51 11.58	10.648	8 28 49.9	74.12	3 3.3	17	0 54 24.51	9.293	7 18 39.1	73.91	3 4.2
18	22 55 26.49	10.595	7 59 5.6	74.58	3 3.6	18	0 58 7.04	9.251	7 48 7.3	73.44	3 4.0
19	22 59 40.14	10.543	7 29 10.5	75.00	3 3.9	19	1 1 48.57	9.209	8 17 24.0	72.95	3 3.8
20	23 3 52.54	10.491	6 59 5.7	75.38	3 4.1	20	1 5 29.09	9.167	8 46 28.5	72.43	3 3.6
21	23 8 3.72	10.441	6 28 52.2	75.74	3 4.3	21	1 9 8.56	9.123	9 15 20.3	71.88	3 3.3
22	23 12 13.70	10.392	5 58 30.5	76.06	3 4.6	22	1 12 46.98	9.078	9 43 58.8	71.32	3 3.0
23	23 16 22.51	10.343	5 28 1.5	76.35	3 4.9	23	1 16 24.31	9.032	10 12 23.3	70.72	3 2.6
24	23 20 30.16	10.295	4 57 25.9	76.62	3 5.1	24	1 20 0.52	8.985	10 40 33.1	70.10	3 2.3
25	23 24 36.68	10.249	4 26 44.2	76.85	3 5.3	25	1 23 35.58	8.936	11 8 27.7	69.45	3 1.9
26	23 28 42.10	10.203	3 55 57.4	77.05	3 5.4	26	1 27 9.44	8.885	11 36 6.5	68.78	3 1.6
27	23 32 46.43	10.158	3 25 6.1	77.22	3 5.5	27	1 30 42.05	8.832	12 3 28.8	68.07	3 1.2
28	23 36 49.68	10.113	2 54 11.0	77.36	3 5.6	28	1 34 13.36	8.777	12 30 34.0	67.35	3 0.7
29	23 40 51.86	10.069	2 23 13.0	77.47	3 5.7	29	1 37 43.33	8.719	12 57 21.3	66.59	3 0.3
30	23 44 53.01	10.026	1 52 12.6	77.55	3 5.8	30	1 41 11.88	8.659	13 23 50.0	65.80	2 59.8
31	23 48 53.13	9.983	1 21 10.6	77.60	3 5.8	31	1 44 38.95	8.596	13 49 59.7	65.00	2 59.3
32	23 52 52.23	+9.941	− 0 50 7.8	+77.62	3 5.8	32	1 48 4.45	+8.529	+14 15 49.7	+64.16	2 58.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	7″.9	8″.2	8″.5	8″.8	9″.1	9″.4	9″.8
Hor. Parallax	8.2	8.5	8.7	9.1	9.4	9.8	10.2

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	10″.2	10″.7	11″.2	11″.8	12″.5	13″.2
Hor. Parallax	10.6	11.1	11.6	12.2	12.9	13.6

Note.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	1 37 43.33	+8.719	+12 57 21.3	+66.59	3 0.3
2	1 41 11.88	8.650	13 23 50.0	65.80	2 59.8
3	1 44 38.95	8.596	13 49 59.7	65.00	2 59.3
4	1 48 4.45	8.529	14 15 49.7	64.16	2 58.7
5	1 51 28.32	8.460	14 41 19.2	63.29	2 58.2
6	1 54 50.49	8.386	15 6 27.5	62.40	2 57.7
7	1 58 10.85	8.309	15 31 14.1	61.48	2 57.1
8	2 1 29.30	8.228	15 55 38.4	60.53	2 56.4
9	2 4 45.75	8.142	16 19 39.5	59.55	2 55.7
10	2 8 0.10	8.052	16 43 16.8	58.55	2 55.0
11	2 11 12.23	7.957	17 6 29.9	57.53	2 54.3
12	2 14 22.02	7.857	17 29 18.1	56.48	2 53.5
13	2 17 29.36	7.753	17 51 40.8	55.40	2 52.7
14	2 20 34.13	7.643	18 13 37.2	54.30	2 51.8
15	2 23 36.21	7.528	18 35 6.9	53.17	2 50.9
16	2 26 35.44	7.407	18 56 9.0	52.01	2 50.0
17	2 29 31.70	7.279	19 16 43.2	50.83	2 49.0
18	2 32 24.82	7.145	19 36 48.7	49.62	2 47.9
19	2 35 14.64	7.005	19 56 25.0	48.39	2 46.8
20	2 38 1.01	6.857	20 15 31.4	47.14	2 45.5
21	2 40 43.73	6.701	20 34 7.3	45.85	2 44.3
22	2 43 22.63	6.538	20 52 11.9	44.53	2 43.0
23	2 45 57.53	6.367	21 9 44.6	43.19	2 41.7
24	2 48 28.20	6.187	21 26 44.7	41.82	2 40.2
25	2 50 54.44	5.997	21 43 11.5	40.41	2 39.7
26	2 53 16.02	5.799	21 59 4.0	38.97	2 37.1
27	2 55 32.74	5.590	22 14 21.5	37.49	2 35.4
28	2 57 44.32	5.371	22 29 3.2	35.97	2 33.7
29	2 59 50.52	5.141	22 43 7.9	34.41	2 31 9
30	3 1 51.06	4.900	22 56 34.7	32.81	2 30.0
31	3 3 45.70	4.648	23 9 22.4	31.16	2 27.9
32	3 5 34.12	+4.384	+23 21 30.1	+29.47	2 25.7

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	13″.2	14″.0	14″.9	16″.0	17″.1	18″.5
Hor. Parallax	13.6	14.5	15.4	16.5	17.7	19.1

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 5 34.12	+4.384	+23 21 30.1	+29.47	2 25.7
2	3 7 16.08	4.108	23 32 56.5	27.72	2 23.5
3	3 8 51.26	3.820	23 43 40.3	25.92	2 21.1
4	3 10 19.38	3.520	23 53 40.0	24.05	2 18.6
5	3 11 40.17	3.208	24 2 54.4	22.13	2 16.0
6	3 12 53.32	2.884	24 11 21.7	20.14	2 13.3
7	3 13 58.54	2.547	24 19 0.5	18.08	2 10.4
8	3 14 55.54	2.199	24 25 49.0	15.95	2 7.4
9	3 15 44.07	1.842	24 31 45.5	13.74	2 4.3
10	3 16 23.89	1.474	24 36 48.2	11.46	2 1.0
11	3 16 54.78	1.097	24 40 55.2	9.10	1 57.6
12	3 17 16.53	0.712	24 44 4.5	6.65	1 53.9
13	3 17 28.94	+0.319	24 46 14.1	4.13	1 50.2
14	3 17 31.83	−0.080	24 47 22.1	+ 1.52	1 46.3
15	3 17 25.08	0.483	24 47 26.6	− 1.17	1 42.3
16	3 17 8.63	0.888	24 46 25.3	3.96	1 38.0
17	3 16 42.45	1.294	24 44 16.2	6.82	1 33.7
18	3 16 6.54	1.698	24 40 57.5	9.76	1 29.1
19	3 15 20.96	2.098	24 36 27.3	12.77	1 24.5
20	3 14 25.84	2.492	24 30 44.0	15.85	1 19.6
21	3 13 21.38	2.878	24 23 46.2	18.97	1 14.6
22	3 12 7.81	3.252	24 15 33.1	22.14	1 9.4
23	3 10 45.44	3.609	24 6 3.5	25.34	1 4.1
24	3 9 14.65	3.951	23 55 16.9	28.55	0 58.7
25	3 7 35.91	4.272	23 43 13.3	31.76	0 53.1
26	3 5 49.72	4.567	23 29 53.4	34.91	0 47.4
27	3 3 56 76	4.837	23 15 18.4	38.00	0 41.6
28	3 1 57.69	5.078	22 59 29.8	41.02	0 35.7
29	2 59 53.20	5.286	22 42 30.1	43.93	0 29.7
30	2 57 44.09	5.461	22 24 22.0	46.72	0 23.7
31	2 55 31.24	5.598	22 5 9.2	49.30	0 17.5
32	2 53 15.53	−5.698	+21 44 56.3	−51.71	0 11.3

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	20″.0	21″.6	23″.4	25″.2	27″.0	28″.6	29″.6
Hor. Parallax	20.6	22.3	24.1	26.1	28.0	29.5	30.6

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing: — indicates that north declinations are decreasing and south declinations increasing.

VENUS, 1873.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	2 55 31.24	−5.598	+22 5 9.2	−49.30	0 17.5
2	2 53 15.53	5.698	21 44 56.3	51.71	0 11.3
3	2 50 57.88	5.759	21 23 49.1	53.86	0 5.1 23 58.9
4	2 48 39.26	5.780	21 1 53.3	55.75	23 52.7
5	2 46 20.61	5.761	20 39 15.3	57.37	23 46.5
6	2 44 2.89	5.702	20 16 2.3	58.67	23 40.3
7	2 41 47.07	5.604	19 52 21.9	59.64	23 34.2
8	2 39 34.06	5.468	19 28 21.9	60.30	23 28.1
9	2 37 24.75	5.296	19 4 10.4	60.61	23 22.1
10	2 35 19.98	5.090	18 39 55.6	60.57	23 16.2
11	2 33 20.53	4.854	18 15 45.6	60.21	23 10.4
12	2 31 27.11	4.589	17 51 48.2	59.51	23 4.7
13	2 29 40.37	4.298	17 28 11.4	58.51	22 59.1
14	2 28 0.86	3.987	17 5 2.0	57.23	22 53.6
15	2 26 29.07	3.656	16 42 26.7	55.67	22 48.3
16	2 25 5.42	3.310	16 20 31.9	53.87	22 43.1
17	2 23 50.25	2.951	15 59 22.8	51.85	22 38.1
18	2 22 43.81	2.583	15 39 4.7	49.63	22 33.2
19	2 21 46.26	2.210	15 19 41.6	47.25	22 28.4
20	2 20 57.76	1.831	15 1 17.5	44.75	22 23.8
21	2 20 18.36	1.451	14 43 54.6	42.15	22 19.4
22	2 19 48.09	1.072	14 27 35.1	39.46	22 15.1
23	2 19 26.91	0.694	14 12 21.1	36.70	22 11.0
24	2 19 14.78	−0.320	13 58 13.9	33.90	22 7.0
25	2 19 11.55	+0.049	13 45 14.2	31.08	22 3.1
26	2 19 17.09	0.411	13 33 21.8	28.27	21 59.4
27	2 19 31.23	0.766	13 22 36.5	25.47	21 55.8
28	2 19 53.81	1.113	13 12 58.3	22.71	21 52.4
29	2 20 24.64	1.453	13 4 26.2	19.98	21 49.1
30	2 21 3.53	1.784	12 56 59.1	17.29	21 45.9
31	2 21 50.25	2.106	12 50 36.0	14.65	21 42.9
32	2 22 44.59	+2.419	+12 45 15.2	−12.09	21 40.0

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	29″.6	29″.8	29″.3	28″.1	26″.5	24″.6	22″.8
Hor. Parallax	30.6	30.9	30.3	29.1	27.4	25.5	23.5

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	2 22 44.59	+2.419	+12 45 15.2	−12.09	21 40.0
2	2 23 46.34	2.724	12 40 55.2	9.59	21 37.2
3	2 24 55.28	3.019	12 37 34.3	7.17	21 34.5
4	2 26 11.20	3.305	12 35 10.6	4.82	21 31.9
5	2 27 33.88	3.583	12 33 42.5	2.54	21 29.5
6	2 29 3.13	3.852	12 33 8.1	− 0.35	21 27.1
7	2 30 38.73	4.113	12 33 25.2	+ 1.76	21 24.8
8	2 32 20.50	4.365	12 34 31.9	3.78	21 22.7
9	2 34 8.23	4.610	12 36 26.2	5.72	21 20.6
10	2 36 1.74	4.847	12 39 5.8	7.57	21 18.6
11	2 38 0.83	5.075	12 42 28.8	9.34	21 16.7
12	2 40 5.31	5.297	12 46 33.3	11.02	21 15.0
13	2 42 15.04	5.512	12 51 17.0	12.61	21 13.3
14	2 44 29.82	5.718	12 56 38.1	14.13	21 11.7
15	2 46 49.48	5.918	13 2 34.5	15.55	21 10.2
16	2 49 13.88	6.112	13 9 4.0	16.89	21 8.6
17	2 51 42.84	6.299	13 16 4.8	18.16	21 7.2
18	2 54 16.23	6.481	13 23 34.9	19.34	21 5.9
19	2 56 53.89	6.656	13 31 32.4	20.44	21 4.7
20	2 59 35.69	6.825	13 39 55.3	21.46	21 3.5
21	3 2 21.49	6.990	13 48 42.0	22.41	21 2.4
22	3 5 11.17	7.149	13 57 50.5	23.28	21 1.3
23	3 8 4.61	7.303	14 7 19.0	24.08	21 0.3
24	3 11 1.68	7.452	14 17 5.9	24.81	20 59.4
25	3 14 2.29	7.597	14 27 9.5	25.48	20 58.5
26	3 17 6.33	7.738	14 37 28.2	26.07	20 57.7
27	3 20 13.70	7.875	14 48 0.4	26.60	20 56.9
28	3 23 24.31	8.008	14 58 44.6	27.07	20 56.2
29	3 26 38.09	8.138	15 9 39.4	27.48	20 55.5
30	3 29 54.94	8.265	15 20 43.3	27.83	20 54.9
31	3 33 14.80	8.389	15 31 54.8	28.12	20 54.3
32	3 36 37.60	+8.510	+15 43 12.7	+28.36	20 53.8

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	21″.0	19″.3	17″.9	16″.6	15″.4	14″.4
Hor. Parallax	21.7	20.0	18.5	17.2	16.0	14.9

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 33 14.80	+8.389	+15 31 54.8	+28.12	20 54.3
2	3 36 37.60	8.510	15 43 12.7	28.36	20 53.8
3	3 40 3.27	8.628	15 54 35.6	23.54	20 53.3
4	3 43 31.75	8.745	16 6 2.3	28.67	20 52.9
5	3 47 3.00	8.858	16 17 31.4	28.75	20 52.5
6	3 50 36.94	8.970	16 29 1.7	28.77	20 52.2
7	3 54 13.54	9.079	16 40 32.0	28.75	20 51.9
8	3 57 52.72	9.186	16 52 1.2	28.68	20 51.6
9	4 1 34.45	9.291	17 3 28.1	28.55	20 51.4
10	4 5 18.69	9.394	17 14 51.3	28.38	20 51.2
11	4 9 5.38	9.495	17 26 10.0	28.17	20 51.1
12	4 12 54.47	9.595	17 37 22.9	27.90	20 51.0
13	4 16 45.94	9.693	17 48 28.9	27.60	20 51.0
14	4 20 39.72	9.788	17 59 27.1	27.24	20 51.0
15	4 24 35.78	9.882	18 10 16.0	26.84	20 51.0
16	4 28 34.06	9.974	18 20 54.9	26.39	20 51.1
17	4 32 34.51	10.064	18 31 22.6	25.91	20 51.2
18	4 36 37.08	10.151	18 41 38.1	25.38	20 51.3
19	4 40 41.73	10.236	18 51 40.6	24.82	20 51.5
20	4 44 48.42	10.320	19 1 28.9	24.20	20 51.6
21	4 48 57.09	10.402	19 11 2.1	23.55	20 51.8
22	4 53 7.69	10.481	19 20 19.2	22.88	20 52.1
23	4 57 20.18	10.558	19 29 19.5	22.15	20 52.4
24	5 1 34.50	10.635	19 38 2.1	21.39	20 52.7
25	5 5 50.64	10.709	19 46 26.1	20.60	20 53.1
26	5 10 8.52	10.781	19 54 30.8	19.78	20 53.5
27	5 14 28.10	10.850	20 2 15.1	18.92	20 53.9
28	6 18 49.33	10.918	20 9 38.5	18.03	20 54.3
29	5 23 12.18	10.985	20 16 40.2	17.11	20 54.8
30	5 27 36.60	11.049	20 23 19.4	16.17	20 55.3
31	5 32 2.54	11.112	20 29 35.4	15.18	20 55.8
32	5 36 29.97	11.173	+20 35 27.6	+14.17	20 56.3

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	13″.5	12″.7	12″.0	11″.4	10″.8	10″.3
Hor. Parallax	14.0	13.2	12.4	11.8	11.2	10.6

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 36 29.97	11.173	+20 35 27.6	+14.17	20 56.3
2	5 40 58.83	11.232	20 40 55.4	13.14	20 56.9
3	5 45 29.09	11.289	20 45 58.2	12.08	20 57.4
4	5 50 0.72	11.346	20 50 35.1	11.00	20 58.0
5	5 54 33.68	11.400	20 54 45.8	9.89	20 58.6
6	5 59 7.91	11.452	20 58 29.7	8.76	20 59.3
7	6 3 43.38	11.502	21 1 46.2	7.61	20 59.9
8	6 8 20.02	11.550	21 4 34.6	6.43	21 0.6
9	6 12 57.80	11.597	21 6 54.6	5.23	21 1.3
10	6 17 36.67	11.641	21 8 45.6	4.02	21 2.0
11	6 22 16.58	11.684	21 10 7.3	2.78	21 2.8
12	6 26 57.48	11.724	21 10 59.0	1.53	21 3.5
13	6 31 39.31	11.762	21 11 20.7	+ 0.26	21 4.3
14	6 36 22.04	11.798	21 11 11.5	− 1.03	21 5.1
15	6 41 5.61	11.832	21 10 31.3	2.33	21 5.9
16	6 45 49.96	11.863	21 9 19.7	3.64	21 6.7
17	6 50 35.02	11.892	21 7 36.6	4.96	21 7.5
18	6 55 20.76	11.918	21 5 21.5	6.30	21 8.4
19	7 0 7.10	11.943	21 2 34.2	7.64	21 9.2
20	7 4 54.00	11.965	20 59 14.6	8.99	21 10.0
21	7 9 41.40	11.984	20 55 22.6	10.35	21 10.9
22	7 14 29.24	12.002	20 50 57.7	11.72	21 11.7
23	7 19 17.47	12.017	20 46 0.1	13.09	21 12.6
24	7 24 6.06	12.030	20 40 29.4	14.46	21 13.5
25	7 28 54.93	12.042	20 34 25.9	15.83	21 14.4
26	7 33 44.05	12.050	20 27 49.3	17.21	21 15.3
27	7 38 33.35	12.057	20 20 39.7	18.58	21 16.2
28	7 43 22.80	12.063	20 12 57.2	19.96	21 17.0
29	7 48 12.35	12.066	20 4 41.8	21.33	21 17.9
30	7 53 1.95	12.067	19 55 53.5	22.69	21 18.8
31	7 57 51.57	12.067	19 46 32.5	24.06	21 19.7
32	8 2 41.18	12.066	+19 36 38.8	−25.42	21 20.6

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	9″.8	9″.4	9″.0	8″.7	8″.4	8″.1
Hor. Parallax	10.2	9.7	9.3	9.0	8.7	8.4

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

VENUS, 1873.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	8 2 41.18	12.066	+19 36 38.8	−25.42	21 20.6
2	8 7 30.72	12.063	19 26 12.6	26.77	21 21.5
3	8 12 20.18	12.058	19 15 14.1	28.12	21 22.3
4	8 17 9.51	12.052	19 3 43.2	29.45	21 23.2
5	8 21 58.67	12.044	18 51 40.4	30.78	21 24.1
6	8 26 47.64	12.036	18 39 5.9	32.10	21 25.0
7	8 31 36.39	12.026	18 25 59.8	33.41	21 25.8
8	8 36 24.89	12.015	18 12 22.5	34.70	21 26.7
9	8 41 13.10	12.002	17 58 14.1	35.99	21 27.5
10	8 46 1.01	11.989	17 43 35.0	37.26	21 28.4
11	8 50 48.59	11.975	17 28 25.5	38.52	21 29.2
12	8 55 35.82	11.960	17 12 46.0	39.77	21 30.1
13	9 0 22.66	11.943	16 56 36.8	40.99	21 30.9
14	9 5 9.10	11.926	16 39 58.4	42.20	21 31.7
15	9 9 55.11	11.908	16 22 51.1	43.40	21 32.5
16	9 14 40.68	11.889	16 5 15.3	44.58	21 33.3
17	9 19 25.79	11.870	15 47 11.5	45.73	21 34.1
18	9 24 10.43	11.850	15 28 40.4	46.87	21 34.9
19	9 28 54.57	11.829	15 9 42.2	47.98	21 35.7
20	9 33 38.21	11.808	14 50 17.5	49.08	21 36.5
21	9 38 21.33	11.786	14 30 26.8	50.15	21 37.2
22	9 43 3.92	11.764	14 10 10.7	51.20	21 38.0
23	9 47 45.98	11.742	13 49 29.6	52.23	21 38.7
24	9 52 27.52	11.720	13 28 24.1	53.24	21 39.5
25	9 57 8.52	11.698	13 6 54.7	54.21	21 40.3
26	10 1 48.99	11.676	12 45 2.2	55.16	21 41.0
27	10 6 28.93	11.654	12 22 47.2	56.09	21 41.7
28	10 11 8.36	11.632	12 0 10.1	57.00	21 42.4
29	10 15 47.25	11.610	11 37 11.6	57.88	21 43.1
30	10 20 25.63	11.589	11 13 52.2	58.74	21 43.8
31	10 25 3.52	11.569	10 50 12.3	59.57	21 44.4
32	10 29 40.94	11.549	+10 26 12.9	−60.38	21 45.1

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	7″.8	7″.6	7″.4	7″.2	7″.0	6″.8
Hor. Parallax	8.1	7.9	7.6	7.4	7.2	7.1

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	10 25 3.52	11.569	+10 50 12.3	−59.57	21 44.4
2	10 29 40.94	11.549	10 26 12.9	60.38	21 45.1
3	10 34 17.88	11.530	10 1 54.4	61.16	21 45.8
4	10 38 54.38	11.512	9 37 17.5	61.92	21 46.4
5	10 43 30.45	11.494	9 12 22.6	62.65	21 47.1
6	10 48 6.10	11.478	8 47 10.5	63.35	21 47.7
7	10 52 41.37	11.462	8 21 41.9	64.03	21 48.4
8	10 57 16.27	11.447	7 55 57.4	64.68	21 49.0
9	11 1 50.82	11.433	7 29 57.4	65.31	21 49.6
10	11 6 25.05	11.420	7 3 42.7	65.91	21 50.2
11	11 10 58.98	11.408	6 37 14.1	66.48	21 50.8
12	11 15 32.64	11.397	6 10 32.1	67.02	21 51.4
13	11 20 6.04	11.387	5 43 37.4	67.54	21 52.1
14	11 24 39.19	11.377	5 16 30.8	68.01	21 52.7
15	11 29 12.13	11.369	4 49 13.0	68.46	21 53.3
16	11 33 44.90	11.362	4 21 44.7	68.89	21 53.9
17	11 38 17.51	11.356	3 54 6.4	69.29	21 54.5
18	11 42 50.00	11.352	3 26 18.9	69.66	21 55.1
19	11 47 22.40	11.348	2 58 23.0	69.99	21 55.7
20	11 51 54.73	11.346	2 30 19.4	70.30	21 56.3
21	11 56 27.02	11.345	2 2 8.7	70.58	21 56.9
22	12 0 59.30	11.345	1 33 51.7	70.83	21 57.5
23	12 5 31.60	11.347	1 5 29.3	71.04	21 58.1
24	12 10 3.95	11.350	0 37 2.2	71.22	21 58.7
25	12 14 36.39	11.354	+ 0 8 30.9	71.38	21 59.3
26	12 19 8.94	11.359	− 0 20 3.9	71.51	21 59.9
27	12 23 41.64	11.366	0 48 41.2	71.60	22 0.5
28	12 28 14.53	11.375	1 17 20.3	71.66	22 1.1
29	12 32 47.64	11.385	1 46 0.6	71.69	22 1.7
30	12 37 21.01	11.397	2 14 41.3	71.69	22 2.3
31	12 41 54.68	11.409	2 43 21.7	71.67	22 2.9
32	12 46 28.67	11.424	− 3 12 1.0	−71.61	22 3.6

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	6″.7	6″.5	6″.4	6″.2	6″.1	6″.0
Hor. Parallax	6.9	6.7	6.6	6.5	6.3	6.2

Note.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	12 46 28.67	11.494	− 3 12 1.0	−71.61	22 3.6	1	15 8 52.98	12.481	−16 20 39.3	−54.87	22 28.1
2	12 51 3.04	11.441	3 40 38.7	71.52	22 4.2	2	15 13 53.11	12.530	16 42 23.3	53.80	22 29.2
3	12 55 37.82	11.458	4 9 13.8	71.40	22 4.9	3	15 18 54.42	12.579	17 3 41.2	52.69	22 30.3
4	13 0 13.05	11.477	4 37 45.8	71.25	22 5.5	4	15 23 56.92	12.629	17 24 32.2	51.55	22 31.4
5	13 4 48.75	11.498	5 6 13.8	71.07	22 6.2	5	15 29 0.62	12.679	17 44 55.5	50.39	22 32.6
6	13 9 24.98	11.521	5 34 37.0	70.86	22 6.8	6	15 34 5.53	12.729	18 4 50.5	49.19	22 33.7
7	13 14 1.76	11.545	6 2 54.8	70.62	22 7.5	7	15 39 11.63	12.779	18 24 16.3	47.96	22 34.9
8	13 18 39.13	11.570	6 31 6.5	70.34	22 8.2	8	15 44 18.93	12.829	18 43 12.2	46.70	22 36.1
9	13 23 17.14	11.597	6 59 11.0	70.03	22 8.9	9	15 49 27.42	12.879	19 1 37.6	45.41	22 37.4
10	13 27 55.82	11.626	7 27 7.7	69.69	22 9.6	10	15 54 37.11	12.928	19 19 31.6	44.08	22 38.6
11	13 32 35.19	11.656	7 54 56.0	69.32	22 10.4	11	15 59 47.97	12.977	19 36 53.3	42.73	22 39.9
12	13 37 15.30	11.687	8 22 35.1	68.92	22 11.1	12	16 4 59.98	13.025	19 53 42.2	41.35	22 41.2
13	13 41 56.18	11.720	8 50 4.1	68.49	22 11.9	13	16 10 13.14	13.072	20 9 57.7	39.94	22 42.5
14	13 46 37.84	11.754	9 17 22.2	68.02	22 12.6	14	16 15 27.41	13.118	20 25 39.0	38.50	22 43.8
15	13 51 20.33	11.789	9 44 28.6	67.51	22 13.4	15	16 20 42.78	13.163	20 40 45.4	37.03	22 45.1
16	13 56 3.68	11.825	10 11 22.5	66.97	22 14.2	16	16 25 59.22	13.207	20 55 16.2	35.53	22 46.5
17	14 0 47.92	11.862	10 38 3.1	66.40	22 15.0	17	16 31 16.70	13.250	21 9 10.7	34.01	22 47.9
18	14 5 33.05	11.900	11 4 29.5	65.80	22 15.8	18	16 36 35.20	13.291	21 22 28.5	32.47	22 49.3
19	14 10 19.12	11.940	11 30 41.1	65.16	22 16.7	19	16 41 54.66	13.331	21 35 8.9	30.90	22 50.7
20	14 15 6.15	11.980	11 56 36.8	64.48	22 17.6	20	16 47 15.07	13.369	21 47 11.3	29.30	22 52.0
21	14 19 54.16	12.022	12 22 16.1	63.78	22 18.4	21	16 52 36.36	13.405	21 58 35.1	27.68	22 53.4
22	14 24 43.18	12.064	12 47 37.9	63.04	22 19.3	22	16 57 58.53	13.440	22 9 19.8	26.04	22 54.8
23	14 29 33.23	12.107	13 12 41.5	62.26	22 20.2	23	17 3 21.51	13.473	22 19 25.0	24.38	22 56.3
24	14 34 24.33	12.152	13 37 26.2	61.46	22 21.2	24	17 8 45.24	13.504	22 28 50.1	22.72	22 57.8
25	14 39 16.50	12.196	14 1 51.1	60.61	22 22.1	25	17 14 9.70	13.533	22 37 34.7	21.01	22 59.3
26	14 44 9.75	12.242	14 25 55.3	59.74	22 23.1	26	17 19 34.83	13.560	22 45 38.3	19.29	23 0.8
27	14 49 4.11	12.288	14 49 38.1	58.83	22 24.1	27	17 25 0.58	13.585	22 53 0.7	17.57	23 2.3
28	14 53 59.60	12.336	15 12 58.6	57.88	22 25.0	28	17 30 26.89	13.607	22 59 41.3	15.82	23 3.8
29	14 58 56.24	12.384	15 35 56.2	56.91	22 26.0	29	17 35 53.71	13.627	23 5 40.0	14.07	23 5.3
30	15 3 54.03	12.432	15 58 30.1	55.91	22 27.1	30	17 41 20.99	13.644	23 10 56.4	12.30	23 6.8
31	15 8 52.98	12.481	16 20 39.3	54.87	22 28.1	31	17 46 48.67	13.661	23 15 30.2	10.52	23 8.3
32	15 13 53.11	12.530	−16 42 23.3	−53.80	22 29.2	32	17 52 16.71	13.675	−23 19 21.3	− 8.74	23 9.9

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	5.″9	5.″8	5.″7	5.″7	5.″6	5.″5
Hor. Parallax	6.1	6.0	5.9	5.9	5.8	5.7

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter	5.″5	5.″4	5.″3	5.″3	5.″2	5.″2	5.″2
Hor. Parallax	5.6	5.6	5.5	5.5	5.4	5.4	5.4

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	13 16 54.63	+4.697	− 6 8 21.0	−27.57	18 30.5	1	14 10 22.94	+3.809	−11 2 32.9	−19.38	17 21.6
2	13 18 47.12	4.676	6 19 20.0	27.35	18 28.4	2	14 11 53.85	3.766	11 10 14.4	19.07	17 19.2
3	13 20 39.12	4.656	6 30 13.8	27.13	18 26.3	3	14 13 23.73	3.723	11 17 48.4	18.76	17 16.7
4	13 22 30.64	4.636	6 41 2.1	26.90	18 24.3	4	14 14 52.57	3.679	11 25 14.8	18.44	17 14.2
5	13 24 21.66	4.615	6 51 44.9	26.67	18 22.2	5	14 16 20.32	3.633	11 32 33.7	18.13	17 11.7
6	13 26 12.17	4.593	7 2 22.2	26.44	18 20.1	6	14 17 46.96	3.586	11 39 45.0	17.81	17 9.2
7	13 28 2.17	4.572	7 12 54.0	26.21	18 17.9	7	14 19 12.47	3.539	11 46 48.6	17.49	17 6.7
8	13 29 51.64	4.550	7 23 20.1	25.97	18 15.8	8	14 20 36.82	3.490	11 53 44.6	17.17	17 4.2
9	13 31 40.58	4.528	7 33 40.5	25.73	18 13.7	9	14 21 59.99	3.440	12 0 32.8	16.85	17 1.6
10	13 33 28.98	4.505	7 43 55.0	25.49	18 11.6	10	14 23 21.94	3.388	12 7 13.3	16.53	16 59.0
11	13 35 16.82	4.481	7 54 3.8	25.24	18 9.4	11	14 24 42.63	3.335	12 13 46.0	16.20	16 56.4
12	13 37 4.09	4.457	8 4 6.7	25.00	18 7.2	12	14 26 2.04	3.281	12 20 10.8	15.87	16 53.8
13	13 38 50.78	4.432	8 14 3.8	24.75	18 5.1	13	14 27 20.15	3.226	12 26 27.7	15.54	16 51.1
14	13 40 36.87	4.407	8 23 54.9	24.50	18 2.9	14	14 28 36.91	3.169	12 32 36.6	15.20	16 48.4
15	13 42 22.35	4.382	8 33 39.8	24.24	18 0.7	15	14 29 52.27	3.110	12 38 37.4	14.86	16 45.7
16	13 44 7.20	4.355	8 43 18.5	23.99	17 58.5	16	14 31 6.19	3.049	12 44 30.0	14.52	16 43.0
17	13 45 51.42	4.328	8 52 51.1	23.73	17 56.3	17	14 32 18.64	2.987	12 50 14.5	14.18	16 40.3
18	13 47 34.98	4.300	9 2 17.3	23.46	17 54.1	18	14 33 29.58	2.923	12 55 50.6	13.83	16 37.5
19	13 49 17.85	4.271	9 11 37.1	23.19	17 51.8	19	14 34 38.97	2.858	13 1 18.3	13.48	16 34.7
20	13 51 0.03	4.242	9 20 50.5	22.92	17 49.6	20	14 35 46.76	2.790	13 6 37.6	13.13	16 31.9
21	13 52 41.48	4.211	9 29 57.2	22.64	17 47.3	21	14 36 52.90	2.721	13 11 48.3	12.77	16 29.0
22	13 54 22.17	4.179	9 38 57.3	22.36	17 45.1	22	14 37 57.36	2.649	13 16 50.4	12.41	16 26.1
23	13 56 2.10	4.147	9 47 50.6	22.08	17 42.8	23	14 39 0.08	2.576	13 21 43.8	12.04	16 23.2
24	13 57 41.24	4.114	9 56 37.0	21.79	17 40.5	24	14 40 1.02	2.501	13 26 28.3	11.67	16 20.3
25	13 59 19.56	4.079	10 5 16.6	21.50	17 38.2	25	14 41 0.13	2.424	13 31 3.9	11.30	16 17.3
26	14 0 57.05	4.043	10 13 49.2	21.21	17 35.9	26	14 41 57.37	2.345	13 35 30.6	10.92	16 14.3
27	14 2 33.67	4.007	10 22 14.6	20.91	17 33.5	27	14 42 52.69	2.264	13 39 48.2	10.55	16 11.3
28	14 4 9.39	3.969	10 30 32.9	20.61	17 31.2	28	14 43 46.05	2.182	13 43 56.8	10.17	16 8.2
29	14 5 44.20	3.931	10 38 43.9	20.31	17 28.8	29	14 44 37.40	2.098	13 47 56.3	9.79	16 5.1
30	14 7 18.08	3.891	10 46 47.6	20.00	17 26.4	30	14 45 26.71	2.012	13 51 46.8	9.41	16 2.0
31	14 8 51.01	3.851	10 54 44.0	19.69	17 24.0	31	14 46 13.95	1.924	13 55 28.1	9.03	15 58.8
32	14 10 22.94	+3.809	−11 2 32.9	−19.38	17 21.6	32	14 46 59.05	+1.834	−13 59 0.2	− 8.65	15 55.6

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	2d.	10th.	18th.	26th.
Semidiameter	3.4″	3.6″	3.8″	4.0″	Semidiameter	4.3″	4.6″	5.0″	5.4″
Horizontal Parallax	5.9	6.2	6.6	7.0	Horizontal Parallax	7.5	8.1	8.7	9.4

NOTE.—North declinations are marked +, south declinations —.

MARS, 1873.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 44 37.40	+2.098	−13 47 56.3	− 9.79	16 5.1
2	14 45 26.71	2.012	13 51 46.8	9.41	16 2.0
3	14 46 13.95	1.924	13 55 28.1	9.03	15 58.8
4	14 46 59.05	1.834	13 59 0.2	8.65	15 55.6
5	14 47 41.97	1.743	14 2 23.1	8.26	15 52.3
6	14 48 22.67	1.649	14 5 36.6	7.87	15 49.0
7	14 49 1.11	1.554	14 8 40.8	7.48	15 45.7
8	14 49 37.25	1.457	14 11 35.5	7.08	15 42.4
9	14 50 11.05	1.358	14 14 20.8	6.69	15 39.0
10	14 50 42.45	1.258	14 16 56.7	6.30	15 35.6
11	14 51 11.42	1.156	14 19 23.1	5.90	15 32.1
12	14 51 37.91	1.051	14 21 39.9	5.50	15 28.6
13	14 52 1.87	0.945	14 23 47.0	5.09	15 25.0
14	14 52 23.26	0.837	14 25 44.4	4.68	15 21.4
15	14 52 42.01	0.726	14 27 31.9	4.27	15 17.7
16	14 52 58.08	0.614	14 29 9.4	3.85	15 14.0
17	14 53 11.43	0.499	14 30 36.8	3.43	15 10.3
18	14 53 22.01	0.383	14 31 54.0	3.00	15 6.5
19	14 53 29.77	0.264	14 33 0.9	2.57	15 2.7
20	14 53 34.67	0.144	14 33 57.5	2.14	14 58.8
21	14 53 36.66	+0.022	14 34 43.5	1.70	14 54.9
22	14 53 35.70	−0.102	14 35 19.0	1.25	14 50.9
23	14 53 31.75	0.227	14 35 43.7	0.81	14 46.9
24	14 53 24.78	0.353	14 35 57.7	−0.36	14 42.8
25	14 53 14.77	0.480	14 36 0.8	+0.10	14 38.7
26	14 53 1.68	0.609	14 35 53.0	0.55	14 34.5
27	14 52 45.50	0.739	14 35 34.2	1.01	14 30.3
28	14 52 26.21	0.868	14 35 4.3	1.47	14 26.0
29	14 52 3.81	0.998	14 34 23.4	1.93	14 21.6
30	14 51 38.28	1.128	14 33 31.5	2.39	14 17.2
31	14 51 9.63	1.258	14 32 28.7	2.84	14 12.8
32	14 50 37.89	−1.387	−14 31 15.0	+3.30	14 8.3

Day of the Month.	6th.	14th.	22d.	30th.
Semidiameter	5″.8	6″.3	6″.9	7″.4
Horizontal Parallax	10.2	11.1	12.0	13.0

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 50 37.89	−1.387	−14 31 15.0	+ 3.30	14 8.3
2	14 50 3.07	1.515	14 29 50.4	3.75	14 3.8
3	14 49 25.20	1.641	14 28 14.9	4.20	13 59.2
4	14 48 44.30	1.767	14 26 28.7	4.65	13 54.6
5	14 48 0.38	1.892	14 24 31.9	5.09	13 49.9
6	14 47 13.49	2.015	14 22 24.5	5.53	13 45.1
7	14 46 23.68	2.136	14 20 6.5	5.96	13 40.3
8	14 45 30.99	2.255	14 17 38.2	6.39	13 35.5
9	14 44 35.47	2.371	14 14 59.6	6.82	13 30.6
10	14 43 37.19	2.485	14 12 11.0	7.23	13 25.7
11	14 42 36.20	2.596	14 9 12.5	7.64	13 20.8
12	14 41 32.59	2.704	14 6 4.1	8.05	13 15.7
13	14 40 26.45	2.808	14 2 46.2	8.44	13 10.7
14	14 39 17.84	2.909	13 59 19.0	8.82	13 5.6
15	14 38 6.84	3.006	13 55 42.8	9.19	13 0.5
16	14 36 53.57	3.098	13 51 57.8	9.55	12 55.3
17	14 35 38.15	3.186	13 48 4.3	9.90	12 50.1
18	14 34 20.69	3.269	13 44 2.6	10.23	12 44.9
19	14 33 1.31	3.346	13 39 53.2	10.55	12 39.6
20	14 31 40.14	3.417	13 35 36.4	10.84	12 34.3
21	14 30 17.33	3.482	13 31 12.9	11.11	12 29.0
22	14 28 53.04	3.541	13 26 43.2	11.36	12 23.7
23	14 27 27.42	3.593	13 22 7.9	11.58	12 18.3
24	14 26 0.64	3.637	13 17 27.5	11.78	12 12.9
25	14 24 32.87	3.675	13 12 42.7	11.95	12 7.5
26	14 23 4.[illegible]	3.705	13 7 54.2	12.09	12 2.1
27	14 21 35.09	3.727	13 3 2.8	12.19	11 56.7
28	14 20 5.44	3.742	12 58 9.2	12.27	11 51.3
29	14 18 35.54	3.746	12 53 14.2	12.31	11 45.9
30	14 17 5.57	3.747	12 48 18.5	12.32	11 40.5
31	14 15 35.72	3.738	12 43 22.9	12.30	11 35.0
32	14 14 6.19	−3.721	−12 38 28.4	+12.24	11 29.6

Day of the Month.	7th.	15th.	23d.	31st.
Semidiameter	7″.9	8″.4	8″.8	9″.0
Horizontal Parallax	13.9	14.7	15.4	15.7

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing: — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	14 15 35.72	−3.738	−12 43 22.9	+12.30	11 35.0	1	13 43 27.66	−0.816	−11 15 6.1	− 1.32	9 1.7
2	14 14 6.19	3.721	12 38 28.4	12.24	11 29.6	2	13 43 9.67	0.683	11 15 45.7	1.98	8 57.5
3	14 12 37.14	3.697	12 33 35.8	12.14	11 24.2	3	13 42 54.89	0.549	11 16 41.1	2.63	8 53.3
4	14 11 8.77	3.665	12 28 45.8	12.01	11 18.8	4	13 42 43.30	0.417	11 17 52.2	3.29	8 49.2
5	14 9 41.26	3.626	12 23 59.3	11.85	11 13.5	5	13 42 34.88	0.285	11 19 18.8	3.93	8 45.2
6	14 8 14.76	3.581	12 19 17.1	11.66	11 8.1	6	13 42 29.59	0.156	11 21 0.8	4.56	8 41.2
7	14 6 49.44	3.528	12 14 39.9	11.44	11 2.8	7	13 42 27.38	−0.028	11 22 57.9	5.19	8 37.2
8	14 5 25.46	3.469	12 10 8.4	11.18	10 57.5	8	13 42 28.24	+0.100	11 25 9.9	5.81	8 33.3
9	14 4 2.96	3.404	12 5 43.3	10.90	10 52.2	9	13 42 32.16	0.226	11 27 36.9	6.43	8 29.5
10	14 2 42.09	3.334	12 1 25.4	10.59	10 46.9	10	13 42 39.10	0.351	11 30 18.7	7.04	8 25.7
11	14 1 22.96	3.258	11 57 15.2	10.25	10 41.7	11	13 42 49.01	0.474	11 33 14.9	7.64	8 21.9
12	14 0 5.76	3.176	11 53 13.4	9.89	10 36.5	12	13 43 1.86	0.597	11 36 25.2	8.23	8 18.2
13	13 58 50.57	3.089	11 49 20.7	9.50	10 31.3	13	13 43 17.64	0.718	11 39 49.6	8.81	8 14.6
14	13 57 37.52	2.998	11 45 37.6	9.09	10 26.2	14	13 43 36.30	0.836	11 43 27.9	9.38	8 11.0
15	13 56 26.71	2.902	11 42 4.6	8.66	10 21.1	15	13 43 57.78	0.954	11 47 19.7	9.94	8 7.4
16	13 55 18.24	2.802	11 38 42.3	8.20	10 16.1	16	13 44 22.07	1.070	11 51 24.9	10.49	8 3.9
17	13 54 12.24	2.697	11 35 31.3	7.71	10 11.1	17	13 44 49.14	1.185	11 55 43.1	11.03	8 0.4
18	13 53 8.80	2.588	11 32 32.2	7.21	10 6.1	18	13 45 18.96	1.299	12 0 14.3	11.57	7 57.0
19	13 52 8.01	2.477	11 29 45.3	6.69	10 1.2	19	13 45 51.48	1.411	12 4 58.2	12.09	7 53.6
20	13 51 9.94	2.361	11 27 11.3	6.15	9 56.3	20	13 46 26.69	1.522	12 9 54.6	12.61	7 50.3
21	13 50 14.68	2.243	11 24 50.5	5.59	9 51.5	21	13 47 4.55	1.632	12 15 3.3	13.11	7 47.0
22	13 49 22.31	2.121	11 22 43.2	5.01	9 46.7	22	13 47 45.01	1.740	12 20 24.0	13.61	7 43.8
23	13 48 32.87	1.998	11 20 49.8	4.43	9 42.0	23	13 48 28.06	1.847	12 25 56.4	14.10	7 40.6
24	13 47 46.43	1.872	11 19 10.8	3.82	9 37.3	24	13 49 13.65	1.952	12 31 40.5	14.57	7 37.4
25	13 47 3.05	1.743	11 17 46.5	3.20	9 32.7	25	13 50 1.76	2.056	12 37 35.9	15.04	7 34.3
26	13 46 22.77	1.613	11 16 37.3	2.57	9 28.1	26	13 50 52.34	2.159	12 43 42.3	15.50	7 31.2
27	13 45 45.62	1.482	11 15 43.2	1.93	9 23.6	27	13 51 45.36	2.260	12 49 59.6	15.94	7 28.2
28	13 45 11.63	1.350	11 15 4.5	1.29	9 19.1	28	13 52 40.79	2.358	12 56 27.4	16.37	7 25.2
29	13 44 40.82	1.217	11 14 41.3	+ 0.64	9 14.7	29	13 53 38.57	2.456	13 3 5.2	16.78	7 22.2
30	13 44 13.22	1.083	11 14 33.8	− 0.02	9 10.3	30	13 54 38.68	2.552	13 9 52.8	17.19	7 19.3
31	13 43 48.84	0.949	11 14 42.1	0.67	9 6.0	31	13 55 41.07	2.646	13 16 50.1	17.58	7 16.4
32	13 43 27.66	−0.816	−11 15 6.1	− 1.32	9 1.7	32	13 56 45.70	+2.739	−13 23 56.7	−17.96	7 13.5

Day of the Month.	1st.	9th.	17th.	25th.
Semidiameter	9.″0	8.″9	8.″7	8.″4
Horizontal Parallax	15.7	15.6	15.3	14.8

Day of the Month.	2d.	10th.	18th.	26th.
Semidiameter	8.″0	7.″6	7.″2	6.″7
Horizontal Parallax	14.1	13.3	12.5	11.8

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	13 55 41.07	+2.646	−13 16 50.1	−17.58	7 16.4
2	13 56 45.70	2.739	13 23 56.7	17.96	7 13.5
3	13 57 52.52	2.829	13 31 12.2	18.33	7 10.7
4	13 59 1.49	2.918	13 38 36.4	18.68	7 7.9
5	14 0 12.58	3.006	13 46 8.9	19.02	7 5.2
6	14 1 25.76	3.092	13 53 49.3	19.34	7 2.5
7	14 2 40.98	3.176	14 1 37.2	19.65	6 59.8
8	14 3 58.22	3.259	14 9 32.5	19.95	6 57.2
9	14 5 17.42	3.341	14 17 34.8	20.24	6 54.6
10	14 6 38.56	3.421	14 25 43.8	20.51	6 52.0
11	14 8 1.63	3.501	14 33 59.3	20.77	6 49.4
12	14 9 26.58	3.579	14 42 20.9	21.02	6 46.9
13	14 10 53.39	3.655	14 50 48.3	21.26	6 44.5
14	14 12 22.02	3.730	14 59 21.3	21.49	6 42.0
15	14 13 52.44	3.805	15 7 59.6	21.70	6 39.6
16	14 15 24.66	3.880	15 16 42.9	21.91	6 37.2
17	14 16 58.65	3.953	15 25 31.0	22.10	6 34.8
18	14 18 34.39	4.025	15 34 23.8	22.29	6 32.5
19	14 20 11.84	4.096	15 43 20.8	22.46	6 30.2
20	14 21 51.00	4.167	15 52 21.9	22.63	6 27.9
21	14 23 31.85	4.237	16 1 26.9	22.79	6 25.6
22	14 25 14.36	4.307	16 10 35.6	22.93	6 23.4
23	14 26 58.57	4.375	16 19 47.6	23.07	6 21.2
24	14 28 44.39	4.443	16 29 2.7	23.19	6 19.1
25	14 30 31.82	4.510	16 38 20.7	23.30	6 16.9
26	14 32 20.85	4.576	16 47 41.1	23.40	6 14.8
27	14 34 11.47	4.641	16 57 3.9	23.50	6 12.7
28	14 36 3.64	4.706	17 6 28.8	23.58	6 10.7
29	14 37 57.34	4.769	17 15 55.5	23.64	6 8.6
30	14 39 52.56	4.832	17 25 23.5	23.69	6 6.6
31	14 41 49.27	4.894	17 34 52.7	23.74	6 4.6
32	14 43 47.45	+4.954	−17 44 22.8	−23.77	6 2.6

Day of the Month.	4th.	12th.	20th.	28th.
Semidiameter	6″.3	6″.0	5″.7	5″.4
Horizontal Parallax	11.1	10.5	9.9	9.4

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	14 43 47.45	+4.954	−17 44 22.8	−23.77	6 2.6
2	14 45 47.07	5.014	17 53 53.6	23.79	6 0.7
3	14 47 48.12	5.073	18 3 24.7	23.80	5 58.8
4	14 49 50.58	5.132	18 12 55.7	23.79	5 56.9
5	14 51 54.44	5.189	18 22 26.4	23.77	5 55.0
6	14 53 59.67	5.246	18 31 56.6	23.74	5 53.2
7	14 56 6.25	5.302	18 41 26.0	23.70	5 51.4
8	14 58 14.17	5.358	18 50 54.3	23.65	5 49.6
9	15 0 23.43	5.414	19 0 21.3	23.59	5 47.8
10	15 2 34.01	5.468	19 9 46.6	23.52	5 46.0
11	15 4 45.90	5.522	19 19 10.1	23.44	5 44.3
12	15 6 59.08	5.576	19 28 31.6	23.35	5 42.6
13	15 9 13.56	5.630	19 37 50.8	23.25	5 40.9
14	15 11 29.31	5.682	19 47 7.5	23.14	5 39.2
15	15 13 46.32	5.735	19 56 21.4	23.02	5 37.5
16	15 16 4.59	5.787	20 5 32.2	22.89	5 35.9
17	15 18 24.11	5.839	20 14 39.8	22.75	5 34.3
18	15 20 44.88	5.891	20 23 44.0	22.60	5 32.7
19	15 23 6.90	5.943	20 32 44.5	22.44	5 31.1
20	15 25 30.15	5.994	20 41 41.1	22.27	5 29.6
21	15 27 54.62	6.045	20 50 33.4	22.09	5 28.1
22	15 30 20.31	6.096	20 59 21.4	21.91	5 26.6
23	15 32 47.21	6.145	21 8 4.8	21.71	5 25.1
24	15 35 15.29	6.195	21 16 43.4	21.50	5 23.6
25	15 37 44.55	6.244	21 25 16.8	21.28	5 22.1
26	15 40 14.98	6.292	21 33 44.7	21.04	5 20.7
27	15 42 46.56	6.340	21 42 6.8	20.80	5 19.3
28	15 45 19.28	6.386	21 50 23.0	20.55	5 17.9
29	15 47 53.11	6.433	21 58 33.0	20.29	5 16.5
30	15 50 28.05	6.479	22 6 36.6	20.01	5 15.2
31	15 53 4.09	6.524	22 14 33.6	19.73	5 13.9
32	15 55 41.21	+6.569	−22 22 23.6	−19.44	5 12.5

Day of the Month.	5th.	13th.	21st.	29th.
Semidiameter	5″.1	4″.9	4″.7	4″.5
Horizontal Parallax	9.0	8.6	8.2	7.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	15 55 41.21	+6.569	−22 22 23.6	−19.44	5 12.5
2	15 58 19.40	6.613	22 30 6.4	19.13	5 11.2
3	16 0 58.63	6.656	22 37 41.7	18.81	5 9.9
4	16 3 38.90	6.699	22 45 9.3	18.48	5 8.7
5	16 6 20.18	6.741	22 52 28.8	18.14	5 7.4
6	16 9 2.48	6.783	22 59 40.1	17.80	5 6.2
7	16 11 45.78	6.825	23 6 43.0	17.45	5 5.0
8	16 14 30.06	6.865	23 13 37.4	17.08	5 3.8
9	16 17 15.32	6.906	23 20 22.9	16.71	5 2.6
10	16 20 1.54	6.946	23 26 59.3	16.32	5 1.4
11	16 22 48.72	6.986	23 33 26.4	15.93	5 0.3
12	16 25 36.85	7.025	23 39 44.0	15.53	4 59.1
13	16 28 25.90	7.063	23 45 52.0	15.13	4 58.0
14	16 31 15.88	7.102	23 51 50.0	14.71	4 56.9
15	16 34 6.79	7.140	23 57 38.0	14.29	4 55.8
16	16 36 58.60	7.177	24 3 15.7	13.85	4 54.7
17	16 39 51.30	7.214	24 8 42.9	13.41	4 53.7
18	16 42 44.89	7.251	24 13 59.4	12.96	4 52.6
19	16 45 39.36	7.287	24 19 5.0	12.50	4 51.6
20	16 48 34.69	7.323	24 23 59.5	12.04	4 50.6
21	16 51 30.85	7.358	24 28 42.7	11.56	4 49.6
22	16 54 27.85	7.392	24 33 14.4	11.08	4 48.6
23	16 57 25.66	7.425	24 37 34.4	10.59	4 47.6
24	17 0 24.27	7.458	24 41 42.5	10.09	4 46.7
25	17 3 23.65	7.490	24 45 38.5	9.58	4 45.7
26	17 6 23.78	7.521	24 49 22.2	9.06	4 44.8
27	17 9 24.66	7.552	24 52 53.4	8.54	4 43.9
28	17 12 26.25	7.581	24 56 12.0	8.01	4 42.9
29	17 15 28.53	7.609	24 59 17.7	7.47	4 42.0
30	17 18 31.48	7.637	25 2 10.4	6.92	4 41.1
31	17 21 35.09	7.664	25 4 50.0	6.37	4 40.3
32	17 24 39.34	+7.690	−25 7 16.3	− 5.81	4 39.4

Day of the Month.	6th.	14th.	22d.	30th.
Semidiameter	4.″3	4.″1	4.″0	3.″9
Horizontal Parallax	7.6	7.3	7.0	6.8

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	17 21 35.09	+7.664	−25 4 50.0	− 6.37	4 40.3
2	17 24 39.34	7.690	25 7 16.3	5.81	4 39.4
3	17 27 44.20	7.715	25 9 29.0	5.25	4 38.5
4	17 30 49.64	7.739	25 11 28.1	4.68	4 37.7
5	17 33 55.66	7.762	25 13 13.5	4.10	4 36.8
6	17 37 2.23	7.785	25 14 45.1	3.52	4 36.0
7	17 40 9.35	7.807	25 16 2.6	2.94	4 35.2
8	17 43 16.98	7.829	25 17 6.0	2.34	4 34.4
9	17 46 25.12	7.849	25 17 55.1	1.74	4 33.6
10	17 49 33.75	7.869	25 18 29.8	1.14	4 32.8
11	17 52 42.84	7.888	25 18 50.0	− 0.54	4 32.0
12	17 55 52.39	7.907	25 18 55.7	+ 0.07	4 31.2
13	17 59 2.38	7.925	25 18 46.8	0.68	4 30.4
14	18 2 12.79	7.942	25 18 23.2	1.30	4 29.7
15	18 5 23.60	7.959	25 17 44.7	1.92	4 28.9
16	18 8 34.80	7.975	25 16 51.2	2.54	4 28.2
17	18 11 46.37	7.990	25 15 42.7	3.17	4 27.4
18	18 14 58.29	8.004	25 14 19.2	3.80	4 26.7
19	18 18 10.55	8.017	25 12 40.5	4.43	4 25.9
20	18 21 23.12	8.030	25 10 46.7	5.06	4 25.2
21	18 24 35.98	8.042	25 8 37.6	5.70	4 24.5
22	18 27 49.11	8.052	25 6 13.1	6.34	4 23.7
23	18 31 2.48	8.062	25 3 33.2	6.98	4 23.0
24	18 34 16.07	8.071	25 0 38.0	7.62	4 22.3
25	18 37 29.86	8.079	24 57 27.3	8.27	4 21.6
26	18 40 43.84	8.086	24 54 1.2	8.91	4 20.9
27	18 43 57.98	8.092	24 50 19.6	9.56	4 20.2
28	18 47 12.24	8.097	24 46 22.5	10.20	4 19.5
29	18 50 26.62	8.101	24 42 9.9	10.85	4 18.8
30	18 53 41.09	8.104	24 37 41.8	11.49	4 18.1
31	18 56 55.62	8.107	24 32 58.2	12.14	4 17.4
32	19 0 10.20	+8.108	−24 27 59.2	+12.78	4 16.7

Day of the Month.	8th.	16th.	24th.	32d.
Semidiameter	3.″7	3.″6	3.″5	3.″4
Horizontal Parallax	6.6	6.4	6.2	6.0

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 0 10.20	+8.108	−24 27 59.2	+12.78	4 16.7
2	19 3 24.81	8.109	24 22 44.7	13.42	4 16.0
3	19 6 39.42	8.109	24 17 14.9	14.06	4 15.3
4	19 9 54.02	8.108	24 11 29.7	14.70	4 14.6
5	19 13 8.59	8.106	24 5 29.1	15.34	4 13.9
6	19 16 23.12	8.104	23 59 13.4	15.97	4 13.2
7	19 19 37.60	8.101	23 52 42.6	16.60	4 12.5
8	19 22 51.99	8.098	23 45 56.5	17.23	4 11.8
9	19 26 6.29	8.094	23 38 55.3	17.86	4 11.1
10	19 29 20.48	8.089	23 31 39.0	18.49	4 10.4
11	19 32 34.57	8.085	23 24 7.8	19.11	4 9.7
12	19 35 48.54	8.079	23 16 21.7	19.73	4 9.0
13	19 39 2.36	8.072	23 8 20.8	20.34	4 8.2
14	19 42 16.02	8.066	23 0 5.2	20.96	4 7.5
15	19 45 29.52	8.059	22 51 34.9	21.57	4 6.8
16	19 48 42.84	8.051	22 42 50.1	22.17	4 6.1
17	19 51 55.96	8.042	22 33 50.8	22.77	4 5.4
18	19 55 8.88	8.034	22 24 37.2	23.36	4 4.6
19	19 58 21.59	8.025	22 15 9.3	23.96	4 3.9
20	20 1 34.06	8.014	22 5 27.2	24.54	4 3.2
21	20 4 46.28	8.004	21 55 31.2	25.12	4 2.4
22	20 7 58.24	7.993	21 45 21.3	25.70	4 1.7
23	20 11 9.92	7.981	21 34 57.5	26.27	4 0.9
24	20 14 21.32	7.969	21 24 20.2	26.84	4 0.2
25	20 17 32.42	7.956	21 13 29.4	27.39	3 59.4
26	20 20 43.20	7.942	21 2 25.3	27.94	3 58.7
27	20 23 53.64	7.928	20 51 8.0	28.49	3 57.9
28	20 27 3.75	7.914	20 39 37.8	29.03	3 57.1
29	20 30 13.51	7.899	20 27 54.8	29.56	3 56.3
30	20 33 22.91	7.884	20 15 59.1	30.08	3 55.5
31	20 36 31.94	7.869	20 3 50.9	30.60	3 54.8
32	20 39 40.60	+7.853	−19 51 30.4	+31.11	3 54.0

Day of the Month.	1st.	9th.	17th.	25th.
Semidiameter	3″.4	3″.3	3″.2	3″.1
Horizontal Parallax	6.0	5.8	5.6	5.5

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 36 31.94	+7.869	−20 3 50.9	+30.60	3 54.8
2	20 39 40.60	7.853	19 51 30.4	31.11	3 54.0
3	20 42 48.87	7.837	19 38 57.7	31.62	3 53.2
4	20 45 56.76	7.821	19 26 12.9	32.11	3 52.3
5	20 49 4.26	7.804	19 13 16.3	32.60	3 51.5
6	20 52 11.37	7.788	19 0 8.2	33.08	3 50.7
7	20 55 18.07	7.771	18 46 48.6	33.55	3 49.9
8	20 58 24.37	7.754	18 33 17.7	34.02	3 49.0
9	21 1 30.27	7.737	18 19 35.7	34.48	3 48.2
10	21 4 35.76	7.720	18 5 42.6	34.94	3 47.3
11	21 7 40.85	7.704	17 51 38.8	35.38	3 46.5
12	21 10 45.53	7.687	17 37 24.3	35.82	3 45.6
13	21 13 49.81	7.670	17 22 59.5	36.25	3 44.7
14	21 16 53.69	7.653	17 8 24.4	36.67	3 43.9
15	21 19 57.16	7.636	16 53 39.2	37.09	3 43.0
16	21 23 0.21	7.619	16 38 44.1	37.50	3 42.1
17	21 26 2.86	7.602	16 23 39.4	37.89	3 41.2
18	21 29 5.11	7.585	16 8 25.2	38.28	3 40.3
19	21 32 6.95	7.568	15 53 1.7	38.67	3 39.4
20	21 35 8.37	7.550	15 37 29.0	39.05	3 38.4
21	21 38 9.37	7.533	15 21 47.4	39.42	3 37.5
22	21 41 9.95	7.516	15 5 57.1	39.77	3 36.6
23	21 44 10.12	7.499	14 49 58.3	40.12	3 35.6
24	21 47 9.88	7.481	14 33 51.3	40.46	3 34.7
25	21 50 9.22	7.464	14 17 36.2	40.79	3 33.7
26	21 53 8.13	7.446	14 1 13.3	41.11	3 32.8
27	21 56 6.63	7.429	13 44 42.8	41.43	3 31.8
28	21 59 4.71	7.411	13 28 4.8	41.74	3 30.8
29	22 2 2.37	7.394	13 11 19.6	42.03	3 29.9
30	22 4 59.61	7.377	12 54 27.5	42.31	3 28.9
31	22 7 56.45	7.360	12 37 23.7	42.59	3 27.9
32	22 10 52.88	+7.343	−12 20 23.3	+42.86	3 26.9

Day of the Month.	3d.	11th.	19th.	27th.	35th.
Semidiameter	3″.0	3″.0	2″.9	2″.8	2″.7
Hor. Parallax	5.3	5.2	5.1	4.9	4.8

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	10 14 4.05	−0.461	+12 4 4.2	+ 3.25	15 26.6	1	10 3 22.34	−1.178	+13 10 5.4	+ 6.80	13 13.8
2	10 13 52.65	0.491	12 5 24.4	3.42	15 22.5	2	10 2 53.91	1.190	13 12 49.3	6.85	13 9.4
3	10 13 40.49	0.521	12 6 48.4	3.58	15 18.3	3	10 2 25.19	1.201	13 15 34.2	6.89	13 5.0
4	10 13 27.65	0.550	12 8 16.1	3.73	15 14.2	4	10 1 56.20	1.211	13 18 20.1	6.93	13 0.6
5	10 13 14.12	0.579	12 9 47.5	3.89	15 10.0	5	10 1 26.96	1.220	13 21 6.8	6.96	12 56.2
6	10 12 59.89	0.607	12 11 22.7	4.04	15 5.8	6	10 0 57.50	1.229	13 23 54.2	6.99	12 51.8
7	10 12 44.98	0.635	12 13 1.5	4.19	15 1.6	7	10 0 27.84	1.238	13 26 42.1	7.01	12 47.4
8	10 12 29.41	0.663	12 14 43.8	4.34	14 57.4	8	9 59 57.99	1.246	13 29 30.4	7.02	12 42.9
9	10 12 13.17	0.691	12 16 29.8	4.48	14 53.2	9	9 59 27.98	1.253	13 32 19.0	7.03	12 38.5
10	10 11 56.28	0.718	12 18 19.2	4.62	14 49.0	10	9 58 57.83	1.259	13 35 7.7	7.03	12 34.1
11	10 11 38.74	0.745	12 20 12.0	4.76	14 44.8	11	9 58 27.55	1.264	13 37 56.4	7.03	12 29.7
12	10 11 20.56	0.771	12 22 8.0	4.90	14 40.6	12	9 57 57.18	1.268	13 40 45.0	7.02	12 25.2
13	10 11 1.75	0.796	12 24 7.2	5.03	14 36.4	13	9 57 26.73	1.270	13 43 33.5	7.01	12 20.8
14	10 10 42.33	0.821	12 26 9.4	5.16	14 32.1	14	9 56 56.23	1.271	13 46 21.6	6.99	12 16.3
15	10 10 22.30	0.846	12 28 14.8	5.29	14 27.8	15	9 56 25.70	1.272	13 49 9.3	6.97	12 11.9
16	10 10 1.68	0.871	12 30 23.2	5.41	14 23.5	16	9 55 55.15	1.272	13 51 56.4	6.95	12 7.4
17	10 9 40.48	0.895	12 32 34.4	5.53	14 19.2	17	9 55 24.61	1.271	13 54 43.0	6.92	12 2.9
18	10 9 18.71	0.919	12 34 48.4	5.64	14 14.9	18	9 54 54.11	1.270	13 57 28.7	6.89	11 58.5
19	10 8 56.39	0.942	12 37 5.1	5.75	14 10.6	19	9 54 23.66	1.267	14 0 13.5	6.85	11 54.1
20	10 8 33.51	0.964	12 39 24.5	5.86	14 6.3	20	9 53 53.28	1.264	14 2 57.3	6.80	11 49.7
21	10 8 10.10	0.986	12 41 46.5	5.96	14 2.0	21	9 53 22.99	1.260	14 5 40.0	6.75	11 45.2
22	10 7 46.18	1.007	12 44 10.9	6.06	13 57.6	22	9 52 52.83	1.254	14 8 21.4	6.70	11 40.8
23	10 7 21.76	1.028	12 46 37.7	6.16	13 53.2	23	9 52 22.82	1.248	14 11 1.5	6.64	11 36.4
24	10 6 56.85	1.047	12 49 6.7	6.25	13 48.9	24	9 51 52.97	1.240	14 13 40.0	6.57	11 32.0
25	10 6 31.48	1.066	12 51 37.9	6.34	13 44.6	25	9 51 23.31	1.231	14 16 16.9	6.50	11 27.5
26	10 6 5.65	1.085	12 54 11.0	6.42	13 40.2	26	9 50 53.86	1.222	14 18 52.2	6.43	11 23.1
27	10 5 39.39	1.102	12 56 46.0	6.50	13 35.8	27	9 50 24.66	1.212	14 21 25.7	6.35	11 18.7
28	10 5 12.73	1.119	12 59 22.8	6.57	13 31.4	28	9 49 55.71	1.200	14 23 57.2	6.27	11 14.3
29	10 4 45.67	1.135	13 2 1.3	6.64	13 27.0	29	9 49 27.04	1.188	14 26 26.7	6.19	11 9.9
30	10 4 18.24	1.150	13 4 41.3	6.70	13 22.6	30	9 48 58.66	1.176	14 28 54.2	6.10	11 5.5
31	10 3 50.46	1.165	13 7 22.7	6.75	13 18.2	31	9 48 30.60	1.162	14 31 19.6	6.00	11 1.1
32	10 3 22.34	−1.178	+13 10 5.4	+ 6.80	13 13.8	32	9 48 2.88	−1.147	+14 33 42.6	+ 5.90	10 56.8

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	20″.2	20″.6	21″.0	21″.3	Polar Semidiameter	21″.4	21″.5	21″.4	21″.3
Horizontal Parallax	1.9	1.9	2.0	2.0	Horizontal Parallax	2.0	2.0	2.0	2.0

Note.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	9 49 27.04	−1.188	+14 26 26.7	+ 6.19	11 9.9
2	9 48 58.66	1.176	14 28 54.2	6.10	11 5.5
3	9 48 30.60	1.162	14 31 19.6	6.00	11 1.1
4	9 48 2.88	1.147	14 33 42.6	5.90	10 56.8
5	9 47 35.53	1.131	14 36 3.2	5.80	10 52.4
6	9 47 8.57	1.115	14 38 21.2	5.69	10 48.0
7	9 46 42.00	1.099	14 40 36.7	5.58	10 43.6
8	9 46 15.84	1.081	14 42 49.6	5.47	10 39.3
9	9 45 50.11	1.063	14 44 59.8	5.36	10 34.9
10	9 45 24.83	1.044	14 47 7.2	5.24	10 30.6
11	9 45 0.01	1.024	14 49 11.7	5.12	10 26.3
12	9 44 35.68	1.003	14 51 13.3	5.00	10 22.0
13	9 44 11.84	0.982	14 53 11.8	4.87	10 17.6
14	9 43 48.51	0.961	14 55 7.2	4.74	10 13.3
15	9 43 25.71	0.939	14 56 59.7	4.61	10 9.0
16	9 43 3.44	0.917	14 58 49.1	4.48	10 4.7
17	9 42 41.71	0.894	15 0 35.3	4.35	10 0.4
18	9 42 20.55	0.870	15 2 18.3	4.22	9 56.1
19	9 41 59.97	0.845	15 3 58.0	4.08	9 51.8
20	9 41 39.97	0.820	15 5 34.4	3.94	9 47.6
21	9 41 20.57	0.795	15 7 7.4	3.80	9 43.3
22	9 41 1.79	0.770	15 8 37.0	3.66	9 39.0
23	9 40 43.63	0.744	15 10 3.2	3.52	9 34.8
24	9 40 26.10	0.717	15 11 26.0	3.37	9 30.6
25	9 40 9.21	0.690	15 12 45.2	3.22	9 26.4
26	9 39 52.98	0.662	15 14 0.8	3.07	9 22.2
27	9 39 37.42	9.634	15 15 12.9	2.92	9 18.0
28	9 39 22.53	0.606	15 16 21.4	2.77	9 13.9
29	9 39 8.32	0.578	15 17 26.2	2.62	9 9.7
30	9 38 54.80	0.549	15 18 27.4	2.47	9 5.5
31	9 38 41.98	0.520	15 19 24.8	2.32	9 1.4
32	9 38 29.86	−0.490	+15 20 18.6	+ 2.17	8 57.3

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	21.″3	21.″0	20.″6	20.″1
Horizontal Parallax	2.0	2.0	1.9	1.9

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	9 38 29.86	−0.490	+15 20 18.6	+ 2.17	8 57.3
2	9 38 18.46	0.460	15 21 8.7	2.01	8 53.2
3	9 38 7.78	0.430	15 21 55.1	1.85	8 49.1
4	9 37 57.80	0.400	15 22 37.7	1.70	8 45.0
5	9 37 48.54	0.370	15 23 16.6	1.55	8 40.9
6	9 37 40.01	0.340	15 23 51.7	1.39	8 36.8
7	9 37 32.21	0.310	15 24 23.1	1.23	8 32.7
8	9 37 25.12	0.280	15 24 50.8	1.07	8 28.7
9	9 37 18.76	0.250	15 25 14.7	0.91	8 24.7
10	9 37 13.13	0.219	15 25 34.9	0.76	8 20.6
11	9 37 8.24	0.188	15 25 51.4	0.60	8 16.6
12	9 37 4.09	0.158	15 26 4.3	0.44	8 12.6
13	9 37 0.66	0.128	15 26 13.5	0.29	8 8.6
14	9 36 57.96	0.097	15 26 19.0	+ 0.14	8 4.6
15	9 36 55.99	0.066	15 26 20.8	− 0.01	8 0.7
16	9 36 54.76	0.036	15 26 18.9	0.16	7 56.7
17	9 36 54.25	−0.006	15 26 13.3	0.31	7 52.8
18	9 36 54.46	+0.024	15 26 4.1	0.46	7 48.9
19	9 36 55.40	0.055	15 25 51.3	0.61	7 45.0
20	9 36 57.07	0.085	15 25 34.8	0.76	7 41.1
21	9 36 59.47	0.115	15 25 14.6	0.91	7 37.2
22	9 37 2.59	0.145	15 24 50.8	1.06	7 33.3
23	9 37 6.44	0.175	15 24 23.4	1.21	7 29.4
24	9 37 11.01	0.205	15 23 52.5	1.36	7 25.6
25	9 37 16.30	0.235	15 23 17.9	1.51	7 21.8
26	9 37 22.31	0.265	15 22 39.8	1.66	7 18.0
27	9 37 29.03	0.295	15 21 58.2	1.81	7 14.2
28	9 37 37.46	0.324	15 21 13.0	1.96	7 10.4
29	9 37 44.59	0.353	15 20 24.3	2.11	7 6.6
30	9 37 53.42	0.382	15 19 32.2	2.25	7 2.8
31	9 38 2.94	0.411	15 18 36.5	2.40	6 59.0
32	9 38 13.16	+0.440	+15 17 37.4	− 2.54	6 55.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	20.″1	19.″5	19.″0	18.″4
Horizontal Parallax	1.9	1.8	1.8	1.7

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing: — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	9 38 2.94	+0.411	+15 18 36.5	− 2.40	6 59.0
2	9 38 13.16	0.440	15 17 37.4	2.54	6 55.2
3	9 38 24.07	0.468	15 16 34.8	2.68	6 51.5
4	9 38 35.65	0.496	15 15 28.9	2.82	6 47.7
5	9 38 47.91	0.524	15 14 19.5	2.96	6 44.0
6	9 39 0.84	0.552	15 13 6.8	3.10	6 40.3
7	9 39 14.43	0.580	15 11 50.8	3.24	6 36.6
8	9 39 28.67	0.607	15 10 31.5	3.37	6 32.9
9	9 39 43.55	0.634	15 9 8.9	3.51	6 29.2
10	9 39 59.07	0.660	15 7 43.0	3.65	6 25.5
11	9 40 15.23	0.686	15 6 14.0	3.78	6 21.9
12	9 40 32.01	0.712	15 4 41.8	3.91	6 18.2
13	9 40 49.42	0.738	15 3 6.4	4.04	6 14.6
14	9 41 7.45	0.764	15 1 27.8	4.17	6 11.0
15	9 41 26.09	0.789	14 59 46.1	4.30	6 7.4
16	9 41 45.33	0.814	14 58 1.4	4.43	6 3.8
17	9 42 5.16	0.839	14 56 13.6	4.56	6 0.2
18	9 42 25.60	0.864	14 54 22.6	4.69	5 56.6
19	9 42 46.62	0.888	14 52 28.6	4.82	5 53.0
20	9 43 8.21	0.912	14 50 31.7	4.94	5 49.4
21	9 43.30.39	0.936	14 48 31.7	5.06	5 45.8
22	9 43 53.14	0.959	14 46 28.7	5.18	5 42.3
23	9 44 16.44	0.983	14 44 22.8	5.30	5 38.8
24	9 44 40.30	1.006	14 42 14.1	5.42	5 35.2
25	9 45 4.71	1.029	14 40 2.4	5.54	5 31.6
26	9 45 29.67	1.051	14 37 47.7	5.66	5 28.1
27	9 45 55.16	1.073	14 35 30.2	5.78	5 24.6
28	9 46 21.18	1.095	14 33 9.9	5.90	5 21.1
29	9 46 47.72	1.117	14 30 46.8	6.02	5 17.6
30	9 47 14.78	1.138	14 28 20.8	6.14	5 14.1
31	9 47 42.34	1.159	14 25 52.1	6.26	5 10.7
32	9 48 10.40	+1.179	+14 23 20.7	− 6.37	5 7.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	18″.4	17″.8	17″.3	16″.9
Horizontal Parallax	1.7	1.7	1.6	1.6

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	9 48 10.40	+1.179	+14 23 20.7	− 6.37	5 7.2
2	9 48 38.95	1.199	14 20 46.5	6.48	5 3.7
3	9 49 7.99	1.220	14 18 9.7	6.59	5 0.3
4	9 49 37.51	1.240	14 15 30.2	6.70	4 56.9
5	9 50 7.49	1.259	14 12 48.2	6.81	4 53.5
6	9 50 37.93	1.278	14 10 3.6	6.92	4 50.1
7	9 51 8.83	1.297	14 7 16.3	7.02	4 46.7
8	9 51 40.18	1.316	14 4 26.5	7.13	4 43.3
9	9 52 11.97	1.334	14 1 34.3	7.23	4 39.9
10	9 52 44.19	1.352	13 58 39.5	7.34	4 36.5
11	9 53 16.83	1.370	13 55 42.3	7.44	4 33.1
12	9 53 49.89	1.387	13 52 42.7	7.54	4 29.7
13	9 54 23.37	1.404	13 49 40.6	7.64	4 26.3
14	9 54 57.24	1.421	13 46 36.2	7.74	4 22.9
15	9 55 31.54	1.437	13 43 29.4	7.84	4 19.6
16	9 56 6.23	1.453	13 40 20.2	7.94	4 16.3
17	9 56 41.30	1.469	13 37 8.7	8.03	4 12.9
18	9 57 16.76	1.485	13 33 54.9	8.13	4 9.5
19	9 57 52.60	1.501	13 30 38.8	8.22	4 6.2
20	9 58 28.82	1.517	13 27 20.3	8.31	4 2.9
21	9 59 5.40	1.532	13 23 59.7	8.40	3 59.5
22	9 59 42.35	1.547	13 20 36.9	8.49	3 56.2
23	10 0 19.64	1.562	13 17 11.8	8.58	3 52.9
24	10 0 57.29	1.576	13 13 44.5	8.67	3 49.6
25	10 1 35.28	1.590	13 10 15.1	8.76	3 46.3
26	10 2 13.60	1.604	13 6 43.6	8.85	3 43.0
27	10 2 52.25	1.617	13 3 9.9	8.94	3 39.7
28	10 3 31.23	1.630	12 59 34.2	9.03	3 36.4
29	10 4 10.52	1.643	12 55 56.5	9.12	3 33.1
30	10 4 50.11	1.656	12 52 16.6	9.20	3 29.8
31	10 5 30.02	1.669	12 48 34.8	9.28	3 26.5
32	10 6 10.22	+1.681	+12 44 51.0	− 9.36	3 23.3

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	16″.8	16″.4	16″.0	15″.6
Horizontal Parallax	1.6	1.5	1.5	1.5

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	10 5 30.02	+1.669	+12 48 34.8	− 9.28	3 26.5
2	10 6 10.22	1.681	12 44 51.0	9.36	3 23.3
3	10 6 50.71	1.693	12 41 5.4	9.44	3 20.0
4	10 7 31.48	1.705	12 37 17.8	9.52	3 16.7
5	10 8 12.52	1.716	12 33 28.3	9.60	3 13.5
6	10 8 53.83	1.727	12 29 36.9	9.68	3 10.3
7	10 9 35.40	1.738	12 25 43.7	9.75	3 7.0
8	10 10 17.24	1.748	12 21 48.8	9.83	3 3.8
9	10 10 59.34	1.759	12 17 52.1	9.90	3 0.6
10	10 11 41.69	1.769	12 13 53.5	9.98	2 57.4
11	10 12 24.27	1.779	12 9 53.3	10.05	2 54.1
12	10 13 7.09	1.789	12 5 51.3	10.12	2 50.9
13	10 13 50.14	1.799	12 1 47.7	10.19	2 47.7
14	10 14 33.42	1.808	11 57 42.4	10.26	2 44.5
15	10 15 16.93	1.817	11 53 35.5	10.32	2 41.3
16	10 16 0.66	1.826	11 49 26.9	10.39	2 38.1
17	10 16 44.62	1.835	11 45 16.7	10.46	2 34.9
18	10 17 28.78	1.844	11 41 4.9	10.53	2 31.7
19	10 18 13.14	1.853	11 36 51.6	10.59	2 28.5
20	10 18 57.71	1.861	11 32 36.7	10.66	2 25.3
21	10 19 42.47	1.869	11 28 20.4	10.72	2 22.1
22	10 20 27.42	1.877	11 24 2.5	10.78	2 18.9
23	10 21 12.56	1.885	11 19 43.1	10.84	2 15.7
24	10 21 57.88	1.892	11 15 22.3	10.90	2 12.5
25	10 22 43.37	1.899	11 11 0.1	10.96	2 9.3
26	10 23 29.04	1.906	11 6 36.5	11.01	2 6.2
27	10 24 14.86	1.913	11 2 11.5	11.06	2 3.0
28	10 25 0.85	1.919	10 57 45.2	11.12	1 59.8
29	10 25 46.98	1.925	10 53 17.7	11.17	1 56.6
30	10 26 33.26	1.931	10 48 48.8	11.22	1 53.5
31	10 27 19.68	1.937	10 44 18.8	11.27	1 50.3
32	10 28 6.23	+1.943	+10 39 47.6	−11.32	1 47.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	15″.6	15″.3	15″.1	14″.9
Horizontal Parallax	1.5	1.4	1.4	1.4

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	10 28 6.23	+1.943	+10 39 47.6	−11.32	1 47.2
2	10 28 52.92	1.948	10 35 15.1	11.37	1 44.0
3	10 29 39.74	1.953	10 30 41.5	11.42	1 40.9
4	10 30 26.67	1.958	10 26 6.9	11.47	1 37.7
5	10 31 13.72	1.963	10 21 31.1	11.52	1 34.6
6	10 32 0.90	1.968	10 16 54.2	11.56	1 31.4
7	10 32 48.19	1.972	10 12 16.3	11.60	1 28.3
8	10 33 35.58	1.977	10 7 37.4	11.64	1 25.1
9	10 34 23.07	1.981	10 2 57.5	11.68	1 22.0
10	10 35 10.66	1.985	9 58 16.6	11.72	1 18.8
11	10 35 58.34	1.989	9 53 34.8	11.76	1 15.7
12	10 36 46.11	1.993	9 48 52.1	11.80	1 12.5
13	10 37 33.96	1.996	9 44 8.5	11.84	1 9.4
14	10 38 21.89	1.999	9 39 23.9	11.88	1 6.3
15	10 39 9.91	2.002	9 34 38.4	11.91	1 3.2
16	10 39 57.99	2.005	9 29 52.2	11.94	1 0.0
17	10 40 46.14	2.008	9 25 8.3	11.97	0 56.9
18	10 41 34.37	2.011	9 20 17.6	12.00	0 53.8
19	10 42 22.66	2.013	9 15 29.0	12.03	0 50.7
20	10 43 11.00	2.015	9 10 39.8	12.06	0 47.5
21	10 43 59.39	2.017	9 5 50.0	12.09	0 44.4
22	10 44 47.83	2.019	9 0 59.4	12.12	0 41.3
23	10 45 36.32	2.021	8 56 8.2	12.15	0 38.2
24	10 46 24.84	2.023	8 51 16.4	12.17	0 35.0
25	10 47 13.40	2.024	8 46 24.1	12.19	0 31.9
26	10 48 1.98	2.025	8 41 31.4	12.21	0 28.8
27	10 48 50.59	2.026	8 36 38.1	12.23	0 25.7
28	10 49 39.21	2.026	8 31 44.4	12.25	0 22.5
29	10 50 27.84	2.027	8 26 50.3	12.27	0 19.4
30	10 51 16.48	2.027	8 21 55.8	12.29	0 16.3
31	10 52 5.13	2.027	8 17 0.9	12.30	0 13.2
32	10 52 53.78	+2.027	+ 8 12 5.7	−12.31	0 10.0

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	14″.9	14″.8	14″.7	14″.7
Horizontal Parallax	1.4	1.4	1.4	1.4

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	10 52 53.78	+2.027	+ 8 12 5.7	−12.31	0 10.0
2	10 53 42.42	2.026	8 7 10.1	12.32	0 6.9
3	10 54 31.05	2.026	8 2 14.3	12.33	0 3.8
4	10 55 19.67	2.025	7 57 18.3	12.34	0 0.7 23 57.5
5	10 56 8.27	2.025	7 52 22.0	12.35	23 54.3
6	10 56 56.86	2.024	7 47 25.7	12.36	23 51.2
7	10 57 45.42	2.023	7 42 29.2	12.37	23 48.1
8	10 58 33.96	2.022	7 37 32.5	12.37	23 45.0
9	10 59 22.46	2.021	7 32 35.7	12.37	23 41.8
10	11 0 10.94	2.020	7 27 38.9	12.37	23 38.7
11	11 0 59.39	2.018	7 22 42.1	12.37	23 35.6
12	11 1 47.79	2.016	7 17 45.3	12.37	23 32.5
13	11 2 36.15	2.014	7 12 58.5	12.37	23 29.3
14	11 3 24.45	2.012	7 7 51.6	12.37	23 26.2
15	11 4 12.70	2.010	7 2 54.9	12.36	23 23.1
16	11 5 0.90	2.007	6 57 58.4	12.36	23 20.0
17	11 5 49.03	2.004	6 53 2.0	12.35	23 16.9
18	11 6 37.09	2.001	6 48 5.8	12.34	23 13.8
19	11 7 25.08	1.998	6 43 9.9	12.33	23 10.7
20	11 8 13.00	1.995	6 38 14.1	12.32	23 7.5
21	11 9 0.83	1.992	6 33 18.7	12.31	23 4.4
22	11 9 48.57	1.988	6 28 23.6	12.29	23 1.2
23	11 10 36.22	1.984	6 23 29.0	12.27	22 58.1
24	11 11 23.78	1.980	6 18 34.7	12.25	22 54.9
25	11 12 11.23	1.976	6 13 40.9	12.23	22 51.8
26	11 12 58.57	1.971	6 8 47.6	12.21	22 48.6
27	11 13 45.79	1.966	6 3 54.9	12.19	22 45.5
28	11 14 32.91	1.961	5 59 2.8	12.16	22 42.3
29	11 15 19.90	1.956	5 54 11.3	12.14	22 39.2
30	11 16 6.79	1.950	5 49 20.5	12.11	22 36.0
31	11 16 53.51	1.945	5 44 30.2	12.08	22 32.9
32	11 17 40.11	+1.939	+ 5 39 40.6	−12.05	22 29.7

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	14″.7	14″.7	14″.7	14″.8
Horizontal Parallax	1.4	1.4	1.4	1.4

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 16 53.51	+1.945	+ 5 44 30.2	−12.08	22 32.9
2	11 17 40.11	1.939	5 39 40.6	12.05	22 29.7
3	11 18 26.57	1.933	5 34 51.9	12.02	22 26.6
4	11 19 12.89	1.927	5 30 3.9	11.99	22 23.4
5	11 19 59.07	1.921	5 25 16.7	11.95	22 20.2
6	11 20 45.11	1.915	5 20 30.3	11.91	22 17.0
7	11 21 30.98	1.908	5 15 44.8	11.87	22 13.9
8	11 22 15.69	1.901	5 11 0.2	11.83	22 10.7
9	11 23 2.24	1.894	5 6 16.7	11.79	22 7.5
10	11 23 47.62	1.887	5 1 34.1	11.75	22 4.3
11	11 24 32.83	1.880	4 56 52.5	11.71	22 1.1
12	11 25 17.86	1.872	4 52 12.0	11.67	21 57.9
13	11 26 2.71	1.865	4 47 32.6	11.62	21 54.7
14	11 26 47.37	1.857	4 42 54.3	11.57	21 51.5
15	11 27 31.84	1.849	4 38 17.3	11.52	21 48.3
16	11 28 16.11	1.841	4 33 41.4	11.47	21 45.1
17	11 29 0.17	1.832	4 29 6.7	11.42	21 41.9
18	11 29 44.03	1.823	4 24 33.4	11.36	21 38.7
19	11 30 27.67	1.814	4 20 1.4	11.30	21 35.5
20	11 31 11.09	1.805	4 15 30.8	11.24	21 32.3
21	11 31 54.29	1.795	4 11 1.7	11.18	21 29.1
22	11 32 37.25	1.785	4 6 34.0	11.12	21 25.8
23	11 33 19.97	1.775	4 2 7.8	11.06	21 22.6
24	11 34 2.44	1.765	3 57 43.3	10.99	21 19.4
25	11 34 44.67	1.754	3 53 20.5	10.92	21 16.2
26	11 35 26.64	1.743	3 48 59.1	10.85	21 12.9
27	11 36 8.35	1.732	3 44 39.9	10.78	21 9.7
28	11 36 49.79	1.721	3 40 22.1	10.70	21 6.4
29	11 37 30.96	1.710	3 36 6.1	10.63	21 3.2
30	11 38 11.85	1.698	3 31 52.0	10.55	20 59.9
31	11 38 52.46	1.686	3 27 39.7	10.47	20 56.7
32	11 39 32.77	+1.674	+ 3 23 29.3	−10.39	20 53.4

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	14″.8	15″.0	15″.2	15″.5
Horizontal Parallax	1.4	1.4	1.4	1.5

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	11 39 32.77	+1.674	+3 23 29.3	−10.39	20 53.4	1	11 56 59.11	+1.192	+1 36 33.6	−7.14	19 12.5
2	11 40 12.79	1.662	3 19 20.9	10.31	20 50.1	2	11 57 27.48	1.172	1 33 43.8	7.00	19 9.1
3	11 40 52.52	1.649	3 15 14.4	10.23	20 46.8	3	11 57 55.36	1.152	1 30 57.3	6.86	19 5.6
4	11 41 31.94	1.636	3 11 10.0	10.15	20 43.5	4	11 58 22.74	1.131	1 28 14.1	6.72	19 2.1
5	11 42 11.06	1.623	3 7 7.6	10.06	20 40.2	5	11 58 49.63	1.110	1 25 34.3	6.58	18 58.6
6	11 42 49.86	1.610	3 3 7.2	9.97	20 36.9	6	11 59 16.01	1.089	1 22 58.1	6.44	18 55.2
7	11 43 28.34	1.597	2 59 9.0	9.88	20 33.6	7	11 59 41.88	1.067	1 20 25.0	6.30	18 51.7
8	11 44 6.50	1.583	2 55 13.0	9.79	20 30.3	8	12 0 7.23	1.045	1 17 55.6	6.15	18 48.2
9	11 44 44.32	1.569	2 51 19.2	9.70	20 27.0	9	12 0 32.05	1.023	1 15 29.7	6.00	18 44.7
10	11 45 21.80	1.555	2 47 27.7	9.60	20 23.7	10	12 0 56.34	1.001	1 13 7.4	5.85	18 41.2
11	11 45 58.95	1.541	2 43 38.5	9.50	20 20.4	11	12 1 20.10	0.978	1 10 48.7	5.70	18 37.7
12	11 46 35.76	1.526	2 39 51.7	9.40	20 17.1	12	12 1 43.31	0.955	1 8 33.7	5.55	18 34.1
13	11 47 12.18	1.511	2 36 7.3	9.30	20 13.8	13	12 2 5.97	0.932	1 6 22.4	5.39	18 30.5
14	11 47 48.25	1.496	2 32 25.4	9.20	20 10.5	14	12 2 28.06	0.908	1 4 14.9	5.23	18 26.9
15	11 48 23.95	1.480	2 28 45.8	9.09	20 7.1	15	12 2 49.58	0.884	1 2 11.2	5.07	18 23.3
16	11 48 59.27	1.464	2 25 8.9	8.98	20 3.8	16	12 3 10.54	0.860	1 0 11.4	4.91	18 19.7
17	11 49 34.20	1.448	2 21 34.6	8.87	20 0.4	17	12 3 30.91	0.836	0 58 15.5	4.75	18 16.1
18	11 50 8.74	1.431	2 18 2.9	8.76	19 57.0	18	12 3 50.69	0.811	0 56 23.6	4.59	18 12.5
19	11 50 42.89	1.414	2 14 33.9	8.65	19 53.6	19	12 4 9.87	0.786	0 54 35.7	4.42	18 8.9
20	11 51 16.63	1.397	2 11 7.7	8.53	19 50.2	20	12 4 28.44	0.761	0 52 51.7	4.25	18 5.3
21	11 51 49.96	1.380	2 7 44.3	8.41	19 46.8	21	12 4 46.41	0.736	0 51 11.7	4.08	18 1.6
22	11 52 22.87	1.362	2 4 23.7	8.29	19 43.4	22	12 5 3.76	0.710	0 49 36.0	3.91	17 58.0
23	11 52 55.35	1.344	2 1 6.0	8.17	19 40.0	23	12 5 20.50	0.684	0 48 4.4	3.74	17 54.3
24	11 53 27.40	1.326	1 57 51.3	8.05	19 36.6	24	12 5 36.61	0.658	0 46 36.9	3.56	17 50.6
25	11 53 59.01	1.308	1 54 39.6	7.93	19 33.2	25	12 5 52.10	0.632	0 45 13.6	3.38	17 46.9
26	11 54 30.18	1.289	1 51 30.8	7.80	19 29.8	26	12 6 6.94	0.606	0 43 54.5	3.21	17 43.2
27	11 55 0.89	1.270	1 48 25.1	7.67	19 26.3	27	12 6 21.15	0.579	0 42 39.6	3.03	17 39.5
28	11 55 31.15	1.252	1 45 22.5	7.54	19 22.9	28	12 6 34.72	0.552	0 41 29.0	2.85	17 35.8
29	11 56 0.95	1.232	1 42 23.0	7.41	19 19.5	29	12 6 47.65	0.525	0 40 22.6	2.67	17 32.0
30	11 56 30.27	1.212	1 39 26.7	7.28	19 16.0	30	12 6 59.92	0.498	0 39 20.6	2.49	17 28.3
31	11 56 59.11	1.192	1 36 33.6	7.14	19 12.5	31	12 7 11.54	0.471	0 38 22.9	2.31	17 24.6
32	11 57 27.48	+1.172	+1 33 43.8	−7.00	19 9.1	32	12 7 22.50	+0.443	+0 37 29.5	−2.13	17 20.8

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	15″.5	15″.8	16″.2	16″.6	Polar Semidiameter	16″.6	17″.1	17″.6	18″.1
Horizontal Parallax	1.5	1.5	1.5	1.6	Horizontal Parallax	1.6	1.6	1.6	1.7

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 35 54.69	+1.248	−21 39 17.8	+ 2.67	0 51.0
2	19 36 24.66	1.250	21 38 13.4	2.69	0 47.5
3	19 36 54.68	1.252	21 37 8.6	2.71	0 44.1
4	19 37 24.74	1.253	21 36 3.4	2.73	0 40.7
5	19 37 54.83	1.254	21 34 57.7	2.75	0 37.2
6	19 38 24.95	1.256	21 33 51.6	2.76	0 33.8
7	19 38 55.10	1.257	21 32 45.1	2.78	0 30.4
8	19 39 25.27	1.257	21 31 38.2	2.80	0 26.9
9	19 39 55.45	1.258	21 30 30.9	2.81	0 23.5
10	19 40 25.65	1.259	21 29 23.2	2.83	0 20.1
11	19 40 55.86	1.259	21 28 15.2	2.84	0 16.6
12	19 41 26.08	1.259	21 27 6.8	2.86	0 13.2
13	19 41 56.29	1.259	21 25 58.1	2.87	0 9.8
14	19 42 26.50	1.259	21 24 49.0	2.89	0 6.3
15	19 42 56.70	1.258	21 23 39.5	2.90	0 2.9 23 59.5
16	19 43 26.89	1.258	21 22 29.7	2.91	23 56.0
17	19 43 57.06	1.257	21 21 19.7	2.92	23 52.6
18	19 44 27.21	1.255	21 20 9.4	2.94	23 49.2
19	19 44 57.32	1.254	21 18 58.8	2.95	23 45.8
20	19 45 27.38	1.251	21 17 47.9	2.96	23 42.3
21	19 45 57.39	1.250	21 16 36.8	2.97	23 38.9
22	19 46 27.36	1.248	21 15 25.5	2.98	23 35.5
23	19 46 57.29	1.246	21 14 14.0	2.99	23 32.0
24	19 47 27.18	1.244	21 13 2.2	3.00	23 28.6
25	19 47 57.02	1.242	21 11 50.2	3.00	23 25.2
26	19 48 26.79	1.239	21 10 38.1	3.01	23 21.7
27	19 48 56.49	1.236	21 9 25.9	3.01	23 18.3
28	19 49 26.12	1.233	21 8 13.5	3.02	23 14.8
29	19 49 55.66	1.229	21 7 0.9	3.03	23 11.4
30	19 50 25.10	1.225	21 5 48.2	3.03	23 7.9
31	19 50 54.45	1.221	21 4 35.4	3.03	23 4.5
32	19 51 23.71	+1.217	−21 3 22.6	+ 3.04	23 1.0

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.1	7″.1	7″.1	7″.1
Horizontal Parallax	0.8	0.8	0.8	0.8

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 51 23.71	+1.217	−21 3 22.6	+ 3.04	23 1.0
2	19 51 52.87	1.213	21 2 9.7	3.04	22 57.6
3	19 52 21.93	1.209	21 0 56.8	3.04	22 54.1
4	19 52 50.89	1.204	20 59 43.8	3.04	22 50.7
5	19 53 19.73	1.199	20 58 30.8	3.04	22 47.2
6	19 53 48.45	1.194	20 57 17.8	3.04	22 43.8
7	19 54 17.05	1.189	20 56 4.9	3.04	22 40.3
8	19 54 45.52	1.183	20 54 52.0	3.04	22 36.9
9	19 55 13.85	1.177	20 53 39.2	3.03	22 33.4
10	19 55 42.03	1.171	20 52 26.4	3.03	22 29.9
11	19 56 10.07	1.165	20 51 13.7	3.03	22 26.5
12	19 56 37.97	1.160	20 50 1.1	3.02	22 23.0
13	19 57 5.73	1.154	20 48 48.7	3.01	22 19.5
14	19 57 33.35	1.148	20 47 36.5	3.01	22 16.0
15	19 58 0.82	1.141	20 46 24.4	3.00	22 12.5
16	19 58 28.12	1.134	20 45 12.5	2.99	22 9.1
17	19 58 55.25	1.127	20 44 0.8	2.98	22 5.6
18	19 59 22.20	1.119	20 42 49.3	2.98	22 2.1
19	19 59 48.97	1.112	20 41 38.0	2.97	21 58.6
20	20 0 15.56	1.104	20 40 26.9	2.96	21 55.1
21	20 0 41.96	1.096	20 39 16.1	2.94	21 51.6
22	20 1 8.18	1.089	20 38 5.6	2.93	21 48.1
23	20 1 34.21	1.081	20 36 55.4	2.92	21 44.6
24	20 2 0.05	1.073	20 35 45.5	2.90	21 41.1
25	20 2 25.69	1.064	20 34 36.0	2.89	21 37.6
26	20 2 51.12	1.055	20 33 26.8	2.88	21 34.1
27	20 3 16.33	1.046	20 32 18.0	2.86	21 30.6
28	20 3 41.32	1.037	20 31 9.7	2.84	21 27.0
29	20 4 6.09	1.028	20 30 1.8	2.82	21 23.5
30	20 4 30.64	1.018	20 28 54.4	2.80	21 20.0
31	20 4 54.95	1.008	20 27 47.5	2.78	21 16.5
32	20 5 19.02	+0.998	−20 26 41.0	+ 2.76	21 12.9

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.1	7″.2	7″.2	7″.3
Horizontal Parallax	0.8	0.8	0.8	0.8

NOTE.—North declinations are marked +, south declinations – .

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	20 4 6.09	+1.028	−20 30 1.8	+ 2.82	21 23.5
2	20 4 30.64	1.018	20 28 54.4	2.80	21 20.0
3	20 4 54.95	1.008	20 27 47.5	2.78	21 16.5
4	20 5 19.02	0.998	20 26 41.0	2.76	21 12.9
5	20 5 42.85	0.988	20 25 34.9	2.74	21 9.4
6	20 6 6.44	0.978	20 24 29.3	2.72	21 5.8
7	20 6 29.79	0.968	20 23 24.3	2.70	21 2.3
8	20 6 52.89	0.957	20 22 19.9	2.67	20 58.7
9	20 7 15.74	0.947	20 21 16.1	2.65	20 55.2
10	20 7 38.33	0.936	20 20 12.9	2.62	20 51.6
11	20 8 0.65	0.925	20 19 10.4	2.59	20 48.0
12	20 8 22.70	0.913	20 18 8.5	2.56	20 44.5
13	20 8 44.49	0.902	20 17 7.3	2.54	20 40.9
14	20 9 6.01	0.891	20 16 6.7	2.51	20 37.3
15	20 9 27.26	0.880	20 15 6.8	2.48	20 33.7
16	20 9 48.23	0.868	20 14 7.5	2.46	20 30.2
17	20 10 8.91	0.856	20 13 8.9	2.43	20 26.6
18	20 10 29.30	0.844	20 12 11.1	2.39	20 23.0
19	20 10 49.40	0.831	20 11 14.1	2.36	20 19.4
20	20 11 9.21	0.819	20 10 17.9	2.33	20 15.7
21	20 11 28.73	0.807	20 9 22.4	2.29	20 12.1
22	20 11 47.95	0.794	20 8 27.8	2.26	20 8.5
23	20 12 6.86	0.781	20 7 34.1	2.22	20 4.9
24	20 12 25.46	0.768	20 6 41.2	2.19	20 1.3
25	20 12 43.74	0.755	20 5 49.2	2.15	19 57.6
26	20 13 1.69	0.741	20 4 58.0	2.11	19 54.0
27	20 13 19.32	0.728	20 4 7.7	2.07	19 50.4
28	20 13 36.62	0.714	20 3 18.4	2.03	19 46.7
29	20 13 53.59	0.700	20 2 30.1	1.99	19 43.1
30	20 14 10.24	0.687	20 1 42.8	1.95	19 39.4
31	20 14 26.56	0.673	20 0 56.4	1.91	19 35.7
32	20 14 42.54	+0.659	−20 0 11.0	+ 1.87	19 32.1

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.3	7″.4	7″.5	7″.6
Horizontal Parallax	0.8	0.8	0.8	0.9

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	20 14 42.54	+0.659	−20 0 11.0	+ 1.87	19 32.1
2	20 14 58.17	0.644	19 59 26.6	1.83	19 28.4
3	20 15 13.45	0.630	19 58 43.3	1.78	19 24.7
4	20 15 28.39	0.615	19 58 1.0	1.74	19 21.0
5	20 15 42.98	0.601	19 57 19.7	1.70	19 17.3
6	20 15 57.22	0.586	19 56 39.5	1.65	19 13.6
7	20 16 11.11	0.571	19 56 0.4	1.61	19 9.9
8	20 16 24.64	0.556	19 55 22.4	1.56	19 6.2
9	20 16 37.80	0.541	19 54 45.5	1.51	19 2.5
10	20 16 50.60	0.526	19 54 9.8	1.46	18 58.8
11	20 17 3.03	0.510	19 53 35.2	1.42	18 55.0
12	20 17 15.09	0.495	19 53 1.7	1.37	18 51.3
13	20 17 26.79	0.480	19 52 29.4	1.32	18 47.5
14	20 17 38.12	0.465	19 51 58.3	1.27	18 43.8
15	20 17 49.09	0.449	19 51 28.4	1.22	18 40.0
16	20 17 59.69	0.434	19 50 59.8	1.17	18 36.3
17	20 18 9.91	0.418	19 50 32.4	1.12	18 32.5
18	20 18 19.74	0.401	19 50 6.2	1.07	18 28.7
19	20 18 29.18	0.385	19 49 41.2	1.02	18 25.0
20	20 18 38.23	0.369	19 49 17.4	0.97	18 21.2
21	20 18 46.89	0.353	19 48 54.8	0.91	18 17.4
22	20 18 55.16	0.336	19 48 33.5	0.86	18 13.6
23	20 19 3.04	0.320	19 48 13.4	0.81	18 9.8
24	20 19 10.53	0.304	19 47 54.7	0.75	18 6.0
25	20 19 17.63	0.288	19 47 37.4	0.69	18 2.1
26	20 19 24.33	0.271	19 47 21.5	0.64	17 58.3
27	20 19 30.63	0.254	19 47 6.9	0.58	17 54.5
28	20 19 36.53	0.238	19 46 53.6	0.53	17 50.6
29	20 19 42.03	0.221	19 46 41.6	0.47	17 46.8
30	20 19 47.12	0.204	19 46 30.9	0.42	17 43.0
31	20 19 51.80	0.186	19 46 21.4	0.37	17 39.1
32	20 19 56.07	+0.170	−19 46 13.3	+ 0.31	17 35.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.6	7″.7	7″.8	8″.0
Horizontal Parallax	0.9	0.9	0.9	0.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing: — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	20 19 51.80	+0.186	−19 46 21.4	+ 0.37	17 39.1	1	20 18 58.32	−0.324	−19 52 34.5	− 1.34	15 36.1
2	20 19 56.07	0.170	19 46 13.3	0.31	17 35.2	2	20 18 50.37	0.339	19 53 7.1	1.38	15 32.1
3	20 19 59.94	0.153	19 46 6.6	0.25	17 31.4	3	20 18 42.06	0.354	19 53 40.8	1.43	15 28.0
4	20 20 3.42	0.137	19 46 1.3	0.19	17 27.5	4	20 18 33.39	0.369	19 54 15.6	1.48	15 23.9
5	20 20 6.50	0.120	19 45 57.4	0.14	17 23.6	5	20 18 24.37	0.383	19 54 51.6	1.52	15 19.8
6	20 20 9.18	0.103	19 45 54.8	0.08	17 19.7	6	20 18 15.00	0.397	19 55 28.7	1.57	15 15.8
7	20 20 11.45	0.086	19 45 53.6	+ 0.02	17 15.8	7	20 18 5.29	0.412	19 56 6.9	1.61	15 11.7
8	20 20 13.31	0.069	19 45 53.7	− 0.03	17 11.9	8	20 17 55.24	0.426	19 56 46.1	1.66	15 7.6
9	20 20 14.77	0.052	19 45 55.1	0.09	17 8.0	9	20 17 44.86	0.439	19 57 26.4	1.70	15 3.5
10	20 20 15.82	0.035	19 45 57.9	0.14	17 4.1	10	20 17 34.15	0.453	19 58 7.7	1.74	14 59.3
11	20 20 16.46	0.018	19 46 2.0	0.20	17 0.1	11	20 17 23.11	0.467	19 58 50.1	1.79	14 55.2
12	20 20 16.70	+0.002	19 46 7.5	0.26	16 56.2	12	20 17 11.75	0.480	19 59 33.5	1.83	14 51.1
13	20 20 16.54	−0.015	19 46 14.3	0.31	16 52.3	13	20 17 0.07	0.493	20 0 17.8	1.86	14 47.0
14	20 20 15.98	0.031	19 46 22.5	0.37	16 48.3	14	20 16 48.07	0.506	20 1 3.0	1.90	14 42.8
15	20 20 15.03	0.048	19 46 32.0	0.42	16 44.4	15	20 16 35.76	0.519	20 1 49.2	1.94	14 38.7
16	20 20 13.68	0.065	19 46 42.9	0.48	16 40.4	16	20 16 23.15	0.531	20 2 36.3	1.98	14 34.6
17	20 20 11.93	0.081	19 46 55.1	0.54	16 36.4	17	20 16 10.25	0.544	20 3 24.3	2.02	14 30.4
18	20 20 9.78	0.098	19 47 8.6	0.59	16 32.4	18	20 15 57.06	0.555	20 4 13.1	2.05	14 26.3
19	20 20 7.22	0.115	19 47 23.5	0.65	16 28.5	19	20 15 43.59	0.567	20 5 2.7	2.08	14 22.1
20	20 20 4.26	0.132	19 47 39.7	0.70	16 24.5	20	20 15 29.84	0.579	20 5 53.1	2.12	14 17.9
21	20 20 0.90	0.148	19 47 57.2	0.76	16 20.5	21	20 15 15.82	0.590	20 6 44.3	2.15	14 13.8
22	20 19 57.15	0.165	19 48 16.0	0.81	16 16.5	22	20 15 1.53	0.601	20 7 36.3	2.18	14 9.6
23	20 19 53.00	0.181	19 48 36.1	0.86	16 12.5	23	20 14 46.97	0.612	20 8 29.0	2.21	14 5.4
24	20 19 48.46	0.197	19 48 57.5	0.92	16 8.5	24	20 14 32.15	0.623	20 9 22.4	2.24	14 1.3
25	20 19 43.53	0.214	19 49 20.2	0.97	16 4.4	25	20 14 17.09	0.633	20 10 16.5	2.27	13 57.1
26	20 19 38.21	0.230	19 49 44.2	1.02	16 0.4	26	20 14 1.79	0.642	20 11 11.3	2.30	13 52.9
27	20 19 32.50	0.246	19 50 9.4	1.08	15 56.4	27	20 13 46.26	0.651	20 12 6.7	2.32	13 48.7
28	20 19 26.41	0.261	19 50 35.9	1.13	15 52.4	28	20 13 30.52	0.660	20 13 2.7	2.34	13 44.5
29	20 19 19.95	0.277	19 51 3.7	1.18	15 48.3	29	20 13 14.57	0.669	20 13 59.2	2.37	13 40.3
30	20 19 13.11	0.293	19 51 32.7	1.24	15 44.3	30	20 12 58.42	0.677	20 14 56.3	2.39	13 36.1
31	20 19 5.90	0.308	19 52 3.0	1.29	15 40.2	31	20 12 42.07	0.685	20 15 53.9	2.41	13 31.9
32	20 18 58.32	−0.324	−19 52 34.5	− 1.34	15 36.1	32	20 12 25.53	−0.693	−20 16 51.9	− 2.43	13 27.7

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.0	8″.1	8″.2	8″.4	Polar Semidiameter	8″.4	8″.5	8″.6	8″.6
Horizontal Parallax	0.9	0.9	0.9	0.9	Horizontal Parallax	1.0	1.0	1.0	1.0

Note.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 12 42.07	−0.685	−20 15 53.9	− 2.41	13 31.9
2	20 12 25.53	0.693	20 16 51.9	2.43	13 27.7
3	20 12 8.81	0.700	20 17 50.3	2.44	13 23.5
4	20 11 51.91	0.708	20 18 49.1	2.46	13 19.3
5	20 11 34.84	0.714	20 19 48.3	2.47	13 15.0
6	20 11 17.62	0.720	20 20 47.8	2.49	13 10.8
7	20 11 0.26	0.726	20 21 47.6	2.50	13 6.6
8	20 10 42.76	0.732	20 22 47.7	2.51	13 2.4
9	20 10 25.13	0.737	20 23 48.1	2.52	12 58.2
10	20 10 7.37	0.742	20 24 48.8	2.53	12 53.9
11	20 9 49.50	0.747	20 25 49.7	2.54	12 49.7
12	20 9 31.53	0.751	20 26 50.7	2.54	12 45.5
13	20 9 13.46	0.755	20 27 51.8	2.55	12 41.2
14	20 8 55.30	0.758	20 28 53.0	2.55	12 37.0
15	20 8 37.06	0.761	20 29 54.2	2.55	12 32.8
16	20 8 18.75	0.764	20 30 55.5	2.55	12 28.5
17	20 8 0.38	0.766	20 31 56.8	2.55	12 24.3
18	20 7 41.96	0.768	20 32 58.1	2.55	12 20.1
19	20 7 23.50	0.770	20 33 59.4	2.55	12 15.8
20	20 7 5.00	0.771	20 35 0.6	2.55	12 11.6
21	20 6 46.48	0.772	20 36 1.7	2.54	12 7.3
22	20 6 27.94	0.772	20 37 2.7	2.54	12 3.1
23	20 6 9.40	0.772	20 38 3.5	2.53	11 58.8
24	20 5 50.87	0.772	20 39 4.1	2.52	11 54.6
25	20 5 32.36	0.771	20 40 4.5	2.51	11 50.4
26	20 5 13.88	0.769	20 41 4.7	2.50	11 46.1
27	20 4 55.43	0.768	20 42 4.6	2.49	11 41.9
28	20 4 37.03	0.766	20 43 4.2	2.48	11 37.7
29	20 4 18.68	0.763	20 44 3.4	2.46	11 33.4
30	20 4 0.39	0.761	20 45 2.3	2.45	11 29.2
31	20 3 42.17	0.757	20 46 0.8	2.43	11 24.9
32	20 3 24.04	−0.753	−20 46 58.8	− 2.41	11 20.7

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.6	8″.7	8″.7	8″.7
Horizontal Parallax	1.0	1.0	1.0	1.0

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 3 24.04	−0.753	−20 46 58.8	− 2.41	11 20.7
2	20 3 6.01	0.749	20 47 56.4	2.39	11 16.5
3	20 2 48.09	0.744	20 48 53.5	2.37	11 12.3
4	20 2 30.29	0.739	20 49 50.1	2.35	11 8.0
5	20 2 12.61	0.734	20 50 46.2	2.33	11 3.8
6	20 1 55.05	0.729	20 51 41.7	2.30	10 59.6
7	20 1 37.62	0.723	20 52 36.6	2.28	10 55.4
8	20 1 20.33	0.717	20 53 31.0	2.26	10 51.2
9	20 1 3.20	0.710	20 54 24.9	2.23	10 47.0
10	20 0 46.23	0.703	20 55 18.2	2.21	10 42.7
11	20 0 29.44	0.696	20 56 10.8	2.18	10 38.5
12	20 0 12.83	0.688	20 57 2.6	2.14	10 34.3
13	19 59 56.41	0.680	20 57 53.7	2.11	10 30.1
14	19 59 40.18	0.672	20 58 44.1	2.09	10 25.9
15	19 59 24.16	0.663	20 59 33.8	2.06	10 21.7
16	19 59 8.35	0.654	21 0 22.8	2.02	10 17.5
17	19 58 52.76	0.645	21 1 11.0	1.99	10 13.4
18	19 58 37.39	0.635	21 1 58.4	1.96	10 9.2
19	19 58 22.26	0.625	21 2 45.1	1.93	10 5.0
20	19 58 7.38	0.615	21 3 31.0	1.89	10 0.8
21	19 57 52.75	0.604	21 4 16.0	1.86	9 56.6
22	19 57 38.38	0.593	21 5 0.1	1.82	9 52.5
23	19 57 24.28	0.582	21 5 43.3	1.78	9 48.3
24	19 57 10.46	0.570	21 6 25.5	1.74	9 44.1
25	19 56 56.93	0.558	21 7 6.8	1.70	9 40.0
26	19 56 43.69	0.545	21 7 47.2	1.67	9 35.8
27	19 56 30.75	0.533	21 8 26.8	1.63	9 31.7
28	19 56 18.11	0.520	21 9 5.5	1.59	9 27.6
29	19 56 5.78	0.507	21 9 43.3	1.55	9 23.4
30	19 55 53.76	0.494	21 10 20.1	1.51	9 19.3
31	19 55 42.07	0.480	21 10 55.9	1.47	9 15.2
32	19 55 30.71	−0.466	−21 11 30.6	− 1.42	9 11.1

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.7	8″.7	8″.6	8″.5
Horizontal Parallax	1.0	1.0	1.0	1.0

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	19 55 30.71	−0.466	−21 11 30.6	− 1.42	9 11.1	1	19 52 43.30	+0.021	−21 20 32.9	− 0.05	7 10.4
2	19 55 19.68	0.453	21 12 4.3	1.38	9 6.9	2	19 52 44.00	0.038	21 20 33.5	0.00	7 6.5
3	19 55 8.98	0.439	21 12 36.9	1.34	9 2.8	3	19 52 45.12	0.055	21 20 32.9	+ 0.05	7 2.6
4	19 54 58.63	0.424	21 13 8.5	1.30	8 58.7	4	19 52 46.66	0.073	21 20 31.2	0.09	6 58.7
5	19 54 48.63	0.409	21 13 39.1	1.25	8 54.6	5	19 52 48.62	0.091	21 20 28.4	0.14	6 54.8
6	19 54 38.98	0.395	21 14 8.7	1.21	8 50.5	6	19 52 51.01	0.109	21 20 24.4	0.19	6 50.9
7	19 54 29.69	0.380	21 14 37.2	1.17	8 46.5	7	19 52 53.83	0.126	21 20 19.2	0.24	6 47.0
8	19 54 20.76	0.365	21 15 4.7	1.12	8 42.4	8	19 52 57.08	0.144	21 20 12.9	0.29	6 43.1
9	19 54 12.19	0.349	21 15 31.1	1.08	8 38.3	9	19 53 0.75	0.161	21 20 5.5	0.33	6 39.3
10	19 54 3.99	0.334	21 15 56.5	1.04	8 34.2	10	19 53 4.83	0.179	21 19 57.0	0.38	6 35.4
11	19 53 56.16	0.318	21 16 20.8	0.99	8 30.2	11	19 53 9.32	0.196	21 19 47.3	0.43	6 31.5
12	19 53 48.71	0.302	21 16 44.0	0.94	8 26.1	12	19 53 14.23	0.213	21 19 36.4	0.48	6 27.7
13	19 53 41.65	0.286	21 17 6.1	0.90	8 22.1	13	19 53 19.55	0.230	21 19 24.4	0.52	6 23.8
14	19 53 34.97	0.270	21 17 27.1	0.85	8 18.1	14	19 53 25.29	0.248	21 19 11.3	0.57	6 20.0
15	19 53 28.67	0.254	21 17 47.0	0.81	8 14.0	15	19 53 31.45	0.265	21 18 57.1	0.62	6 16.2
16	19 53 22.77	0.238	21 18 5.8	0.76	8 10.0	16	19 53 38.03	0.283	21 18 41.7	0.67	6 12.4
17	19 53 17.27	0.221	21 18 23.6	0.72	8 6.0	17	19 53 45.02	0.300	21 18 25.1	0.72	6 8.5
18	19 53 12.17	0.204	21 18 40.3	0.67	8 2.0	18	19 53 52.42	0.317	21 18 7.3	0.76	6 4.7
19	19 53 7.48	0.187	21 18 55.9	0.62	7 57.9	19	19 54 0.23	0.334	21 17 48.4	0.81	6 0.9
20	19 53 3.19	0.170	21 19 10.3	0.57	7 53.9	20	19 54 8.45	0.351	21 17 28.4	0.86	5 57.1
21	19 52 59.30	0.154	21 19 23.5	0.52	7 49.9	21	19 54 17.08	0.368	21 17 7.3	0.90	5 53.3
22	19 52 55.81	0.137	21 19 35.5	0.48	7 46.0	22	19 54 26.13	0.386	21 16 45.1	0.95	5 49.6
23	19 52 52.73	0.120	21 19 46.4	0.43	7 42.0	23	19 54 35.59	0.403	21 16 21.7	1.00	5 45.8
24	19 52 50.07	0.102	21 19 56.2	0.39	7 38.0	24	19 54 45.45	0.419	21 15 57.1	1.05	5 42.0
25	19 52 47.83	0.084	21 20 4.9	0.34	7 34.0	25	19 54 55.70	0.435	21 15 31.4	1.09	5 38.3
26	19 52 46.02	0.066	21 20 12.4	0.29	7 30.1	26	19 55 6.35	0.452	21 15 4.6	1.14	5 34.5
27	19 52 44.64	0.049	21 20 18.8	0.24	7 26.1	27	19 55 17.39	0.468	21 14 36.6	1.19	5 30.8
28	19 52 43.68	0.031	21 20 24.0	0.19	7 22.2	28	19 55 28.81	0.484	21 14 7.5	1.24	5 27.0
29	19 52 43.14	−0.014	21 20 28.1	0.15	7 18.3	29	19 55 40.61	0.500	21 13 37.2	1.29	5 23.3
30	19 52 43.01	+0.003	21 20 31.1	0.10	7 14.3	30	19 55 52.80	0.516	21 13 5.8	1.33	5 19.6
31	19 52 43.30	0.021	21 20 32.9	− 0.05	7 10.4	31	19 56 5.38	0.532	21 12 33.4	1.37	5 15.8
32	19 52 44.00	+0.038	−21 20 33.5	0.00	7 6.5	32	19 56 18.35	+0.548	−21 11 59.9	+ 1.42	5 12.1

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.5	8″.4	8″.3	8″.1	Polar Semidiameter	8″.1	8″.0	7″.9	7″.7
Horizontal Parallax	1.0	1.0	0.9	0.9	Horizontal Parallax	0.9	0.9	0.9	0.9

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 56 18.35	+0.548	−21 11 59.9	+ 1.42	5 12.1
2	19 56 31.70	0.564	21 11 25.4	1.46	5 8.4
3	19 56 45.42	0.579	21 10 49.8	1.51	5 4.7
4	19 56 59.50	0.594	21 10 13.1	1.55	5 1.0
5	19 57 13.94	0.609	21 9 35.2	1.60	4 57.3
6	19 57 28.73	0.624	21 8 56.2	1.65	4 53.6
7	19 57 43.88	0.639	21 8 16.1	1.69	4 50.0
8	19 57 59.38	0.653	21 7 35.0	1.74	4 46.3
9	19 58 15.23	0.668	21 6 52.8	1.79	4 42.6
10	19 58 31.44	0.683	21 6 9.5	1.83	4 39.0
11	19 58 48.00	0.697	21 5 25.2	1.87	4 35.3
12	19 59 4.90	0.711	21 4 39.8	1.91	4 31.7
13	19 59 22.14	0.725	21 3 53.4	1.96	4 28.0
14	19 59 39.71	0.739	21 3 5.9	2.00	4 24.4
15	19 59 57.61	0.753	21 2 17.4	2.04	4 20.7
16	20 0 15.84	0.766	21 1 27.8	2.09	4 17.1
17	20 0 34.39	0.780	21 0 37.2	2.13	4 13.5
18	20 0 53.26	0.793	20 59 45.6	2.17	4 9.9
19	20 1 12.45	0.806	20 58 52.9	2.22	4 6.2
20	20 1 31.95	0.819	20 57 59.2	2.26	4 2.6
21	20 1 51.76	0.832	20 57 4.4	2.30	3 59.0
22	20 2 11.87	0.844	20 56 8.6	2.35	3 55.4
23	20 2 32.27	0.856	20 55 11.8	2.39	3 51.8
24	20 2 52.97	0.869	20 54 14.0	2.43	3 48.2
25	20 3 13.96	0.880	20 53 15.3	2.47	3 44.7
26	20 3 35.23	0.892	20 52 15.6	2.51	3 41.1
27	20 3 56.78	0.904	20 51 14.9	2.55	3 37.5
28	20 4 18.60	0.915	20 50 13.2	2.59	3 33.9
29	20 4 40.69	0.926	20 49 10.6	2.63	3 30.4
30	20 5 3.05	0.937	20 48 7.0	2.67	3 26.8
31	20 5 25.66	0.947	20 47 2.5	2.71	3 23.3
32	20 5 48.52	+0.958	−20 45 57.0	2.75	3 19.7

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.7	7″.6	7″.5	7″.4
Horizontal Parallax	0.9	0.9	0.8	0.8

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 5 25.66	+0.947	−20 47 2.5	+ 2.71	3 23.3
2	20 5 48.52	0.958	20 45 57.0	2.75	3 19.7
3	20 6 11.64	0.969	20 44 50.6	2.79	3 16.2
4	20 6 35.01	0.979	20 43 43.3	2.82	3 12.6
5	20 6 58.62	0.989	20 42 35.1	2.86	3 9.1
6	20 7 22.46	0.998	20 41 26.0	2.90	3 5.5
7	20 7 46.53	1.008	20 40 15.9	2.94	3 2.0
8	20 8 10.83	1.017	20 39 4.9	2.97	2 58.5
9	20 8 35.36	1.027	20 37 53.1	3.01	2 55.0
10	20 9 0.11	1.036	20 36 40.4	3.05	2 51.5
11	20 9 25.07	1.044	20 35 26.9	3.08	2 47.9
12	20 9 50.23	1.053	20 34 12.6	3.11	2 44.4
13	20 10 15.60	1.061	20 32 57.4	3.15	2 40.9
14	20 10 41.18	1.070	20 31 41.3	3.19	2 37.4
15	20 11 6.96	1.078	20 30 24.4	3.22	2 33.9
16	20 11 32.93	1.086	20 29 6.7	3.26	2 30.4
17	20 11 59.08	1.093	20 27 48.1	3.29	2 26.9
18	20 12 25.41	1.101	20 26 28.7	3.32	2 23.4
19	20 12 51.92	1.108	20 25 8.6	3.35	2 19.9
20	20 13 18.61	1.116	20 23 47.7	3.39	2 16.4
21	20 13 45.47	1.123	20 22 26.0	3.42	2 12.9
22	20 14 12.49	1.129	20 21 3.5	3.45	2 9.5
23	20 14 39.66	1.135	20 19 40.3	3.48	2 6.0
24	20 15 6.98	1.141	20 18 16.4	3.51	2 2.5
25	20 15 34.44	1.147	20 16 51.8	3.54	1 59.0
26	20 16 2.04	1.153	20 15 26.4	3.57	1 55.5
27	20 16 29.78	1.159	20 14 0.3	3.60	1 52.1
28	20 16 57.66	1.164	20 12 33.6	3.63	1 48.6
29	20 17 25.66	1.169	20 11 6.2	3.66	1 45.1
30	20 17 53.77	1.174	20 9 38.1	3.68	1 41.7
31	20 18 21.99	1.178	20 8 9.4	3.71	1 38.2
32	20 18 50.32	+1.183	−20 6 40.0	+ 3.74	1 34.7

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.4	7″.3	7″.2	7″.2
Horizontal Parallax	0.8	0.8	0.8	0.8

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
Jan. 1	1	+.1913950	−.8847479	−.3839101	Mar. 1	60	+.9376052	−.2958171	−.1283653
2	2	.2085294	.8814838	.3824941	2	61	.9433406	.2807924	.1218453
3	3	.2255973	.8779446	.3809587	3	62	.9487883	.2656833	.1152885
4	4	.2425933	.8741316	.3793043	4	63	.9539469	.2504946	.1086971
5	5	.2595120	.8700463	.3775315	5	64	.9588152	.2352302	.1020732
6	6	+.2763481	−.8656903	−.3756410	6	65	+.9633924	−.2198979	−.0954190
7	7	.2930965	.8610653	.3736336	7	66	.9676778	.2044994	.0887366
8	8	.3097526	.8561733	.3715103	8	67	.9716708	.1890406	.0820281
9	9	.3263113	.8510159	.3692718	9	68	.9753708	.1735262	.0752956
10	10	.3427675	.8455948	.3669189	10	69	.9787774	.1579609	.0685411
11	11	+.3591164	−.8399118	−.3644524	11	70	+.9818900	−.1423491	−.0617666
12	12	.3753537	.8339691	.3618732	12	71	.9846080	.1266951	.0549740
13	13	.3914744	.8277686	.3591822	13	72	.9872311	.1110036	.0481651
14	14	.4074737	.8213119	.3563804	14	73	.9894589	.0952790	.0413421
15	15	.4233471	.8146009	.3534686	15	74	.9913910	.0795256	.0345069
16	16	+.4390902	−.8076377	−.3504474	16	75	+.9930270	−.0637479	−.0276612
17	17	.4546983	.8004245	.3473177	17	76	.9943665	.0479503	.0208068
18	18	.4701666	.7929631	.3440803	18	77	.9954093	.0321373	.0139457
19	19	.4854905	.7852553	.3407361	19	78	.9961549	.0163135	.0070802
20	20	.5006653	.7773033	.3372859	20	79	.9966030	−.0004834	−.0002120
21	21	+.5156863	−.7691093	−.3337308	21	80	+.9967533	+.0153483	+.0066571
22	22	.5305488	.7606757	3300719	22	81	.9966059	.0311767	.0135250
23	23	.5452477	.7520051	.3263102	23	82	.9961608	.0469969	.0203895
24	24	.5597781	.7431001	.3224470	24	83	.9954180	.0628044	.0272486
25	25	.5741354	.7339633	.3184833	25	84	.9943775	.0785944	.0341002
26	26	+.5883147	−.7245976	−.3144202	26	85	+.9930394	+.0943620	+.0409422
27	27	.6023114	.7150061	.3102588	27	86	.9914048	.1101019	.0477723
28	28	.6161211	.7051920	.3060006	28	87	.9894740	.1258091	.0545885
29	29	.6297392	.6951585	.3016471	29	88	.9872477	.1414786	.0613886
30	30	.6431612	.6849090	.2971998	30	89	.9847270	.1571056	.0681702
31	31	+.6563828	−.6744470	−.2926602	31	90	+.9819129	+.1726853	+ 0749312
Feb. 1	32	.6693997	.6637763	.2880299	April 1	91	.9788069	.1882128	.0816695
2	33	.6822080	.6529006	.2833103	2	92	.9754104	.2036833	.0883832
3	34	.6948040	.6418237	.2785032	3	93	.9717252	.2190921	.0950702
4	35	.7071843	.6305495	.2736105	4	94	.9677528	.2344347	.1017286
5	36	+.7193453	−.6190817	−.2686337	5	95	+.9634949	+.2497068	+.1083561
6	37	.7312835	.6074240	.2635745	6	96	.9589534	.2649042	.1149509
7	38	.7429957	.5955803	.2584347	7	97	.9541304	.2800222	.1215112
8	39	.7544788	.5835545	.2532160	8	98	.9490280	.2950568	.1280351
9	40	.7657296	.5713504	.2479200	9	99	.9436478	.3100040	.1345207
10	41	+.7767450	−.5589719	−.2425486	10	100	+.9379917	+.3248599	+.1409666
11	42	.7875224	.5464230	.2371030	11	101	.9320620	.3396205	.1473712
12	43	.7980587	.5337074	.2315854	12	102	.9258605	.3542817	.1537328
13	44	.8083512	.5208288	.2259972	13	103	.9193890	.3688395	.1600494
14	45	.8183972	.5077909	.2203399	14	104	.9126495	.3832901	.1663192
15	46	+.8281937	−.4945971	−.2146152	15	105	+.9056440	+.3976296	+.1725408
16	47	.8377377	.4812511	.2088246	16	106	.8983745	.4118541	.1787125
17	48	.8470268	.4677568	.2029698	17	107	.8908428	.4259599	.1848327
18	49	.8560578	.4541185	.1970526	18	108	.8830511	.4399430	.1908996
19	50	.8648278	.4403404	.1910747	19	109	.8750015	.4537992	.1969115
20	51	+.8733341	−.4264266	−.1850380	20	110	+.8666962	+.4675246	+.2028668
21	52	.8815741	.4123812	.1789442	21	111	.8581376	4811149	.2087639
22	53	.8895451	.3982086	.1727950	22	112	.8493282	.4945658	.2146008
23	54	.8972445	.3839130	.1665922	23	113	.8402705	.5078736	.2203756
24	55	.9046698	.3694989	.1603380	24	114	.8309672	.5210342	.2260866
25	56	+.9118185	−.3549710	−.1540343	25	115	+.8214213	+.5340434	+.2317320
26	57	.9186884	.3403340	.1476830	26	116	.8116358	.5468973	.2373100
27	58	.9252774	.3255928	.1412863	27	117	.8016135	.5595920	.2428190
28	59	.9315836	.3107522	.1348463	28	118	.7913576	.5721237	.2482573
29	60	+.9376052	−.2958171	−.1283653	29	119	.7808716	.5844887	.2536235
					30	120	+.7701592	+.5966834	+.2589159
					31	121	+.7592238	+.6087045	+.2641320

Greenwich Mean Noon.			X.	Y.	Z.	Greenwich Mean Noon.			X.	Y.	Z.
		d						d			
May	1	121	+.7592238	+.6087045	+.2641329	**July**	1	182	−.1703725	+.9195474	+.3990142
	2	122	.7480693	.6205485	.2692729		2	183	.1870264	.9168160	.3978287
	3	123	.7366995	.6322122	.2743344		3	184	.2036262	.9138268	.3965311
	4	124	.7251180	.6436923	.2793160		4	185	.2201673	.9105808	.3951221
	5	125	.7133288	.6549857	.2842165		5	186	.2366450	.9070794	.3936019
	6	126	+.7013357	+.6660897	+.2890347		6	187	−.2530550	+.9033237	+.3919714
	7	127	.6891425	.6770017	.2937693		7	188	.2693932	.8993148	.3902313
	8	128	.6767536	.6877191	.2984192		8	189	.2856550	.8950540	.3883820
	9	129	.6641708	.6982392	.3029834		9	190	.3018369	.8905426	.3864240
	10	130	.6513994	.7085593	.3074609		10	191	.3179323	.8857818	.3843579
	11	131	+.6384424	+.7186768	+.3118505		11	192	−.3339397	+.8807729	+.3821843
	12	132	.6253034	.7285893	.3161512		12	193	.3498540	.8755171	.3799038
	13	133	.6119816	.7382943	.3203617		13	194	.3656709	.8700156	.3775169
	14	134	.5984941	.7477893	.3244814		14	195	.3813863	.8642656	.3750239
	15	135	.5848311	.7570720	.3285087		15	196	.3969959	.8582802	.3724254
	16	136	+.5710006	+.7661397	+.3324427		16	197	−.4124954	+.8520488	+.3697220
	17	137	.5570062	.7749899	.3362824		17	198	.4278801	.8455767	.3669143
	18	138	.5428517	.7836198	.3400269		18	199	.4431542	.8388655	.3640030
	19	139	.5285413	.7920267	.3436748		19	200	.4582866	.8319168	.3609887
	20	140	.5140789	.8002084	.3472251		20	201	.4732996	.8247325	.3578721
	21	141	+.4994682	+.8081622	+.3506767		21	202	−.4881797	+.8173141	+.3546538
	22	142	.4847134	.8158858	.3540287		22	203	.5029224	.8096635	.3513345
	23	143	.4698190	.8233768	.3572799		23	204	.5175233	.8017827	.3479153
	24	144	.4547892	.8306329	.3604291		24	205	.5319778	.7936740	.3443971
	25	145	.4396288	.8376518	.3634753		25	206	.5462809	.7853398	.3407810
	26	146	+.4243423	+.8444313	+.3664177		26	207	−.5604285	+.7767825	+.3370680
	27	147	.4089345	.8509695	.3692555		27	208	.5744165	.7680048	.3332592
	28	148	.3934104	.8572646	.3719877		28	209	.5882407	.7590095	.3293558
	29	149	.3777748	.8633150	.3746135		29	210	.6018969	.7497993	.3253590
	30	150	.3620322	.8691190	.3771322		30	211	.6153810	.7403771	.3212701
	31	151	+.3461873	+.8746751	+.3795432		31	212	−.6286892	+.7307459	+.3170903
June	1	152	.3302451	.8799819	.3818460	**Aug.**	1	213	.6418178	.7209086	.3128209
	2	153	.3142105	.8850383	.3840400		2	214	.6547633	.7108691	.3084633
	3	154	.2980884	.8898434	.3861248		3	215	.6675223	.7006272	.3040189
	4	155	.2818837	.8943963	.3881001		4	216	.6800916	.6901890	.2994890
	5	156	+.2656909	+.8986960	+.3899654		5	217	−.6924681	+.6795565	+.2948749
	6	157	.2492445	.9027418	.3917205		6	218	.7046483	.6687328	.2901778
	7	158	.2328188	.9065330	.3933651		7	219	.7166291	.6577207	.2853990
	8	159	.2163283	.9100689	.3948989		8	220	.7284075	.6165229	.2805399
	9	160	.1997774	.9133488	.3963214		9	221	.7399798	.6351424	.2756018
	10	161	+.1831707	+.9163719	+.3976325		10	222	−.7513428	+.6235820	+.2705858
	11	162	.1665125	.9191375	.3988318		11	223	.7624935	.6118446	.2654931
	12	163	.1498072	.9216449	.3999192		12	224	.7734288	.5999330	.2603249
	13	164	.1330592	.9238935	.4008946		13	225	.7841454	.5878502	.2550825
	14	165	.1162730	.9258825	.4017575		14	226	.7946401	.5755992	.2497673
	15	166	+.0994530	+.9276114	+.4025076		15	227	−.8049097	+.5631832	+.2443805
	16	167	.0826037	.9290795	.4031447		16	228	.8149507	.5506055	.2389235
	17	168	.0657294	.9302861	.4036685		17	229	.8247598	.5378696	.2333977
	18	169	.0488349	.9312305	.4040786		18	230	.8343340	.5249788	.2278047
	19	170	.0319251	.9319121	.4043749		19	231	.8436697	.5119366	.2221459
	20	171	+.0150050	+.9323305	+.4045571		20	232	−.8527637	+.4987467	+.2164228
	21	172	−.0019208	.9324853	.4046250		21	233	.8616131	.4854127	.2106370
	22	173	.0188473	.9323763	.4045785		22	234	.8702150	.4719386	.2047903
	23	174	.0357694	.9320034	.4044175		23	235	.8785663	.4583282	.1988843
	24	175	.0526819	.9313665	.4041419		24	236	.8866643	.4445858	.1929208
	25	176	−.0695799	+.9304656	+.4037516		25	237	−.8945065	+.4307156	+.1869018
	26	177	.0864585	.9293012	.4032467		26	238	.9020903	.4167217	.1808291
	27	178	.1033110	.9278738	.4026275		27	239	.9094134	.4026984	.1747045
	28	179	.1201338	.9261840	.4018943		28	240	.9164736	.3883801	.1685298
	29	180	.1369215	.9242324	.4010474		29	241	.9232689	.3740411	.1623070
	30	181	−.1536693	+.9220199	+.4000873		30	242	−.9297974	+.3595956	+.1560380
	31	182	−.1703725	+.9195474	+.3990142		31	243	−.9360572	+.3450478	+.1497248

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
Sept. 1	244	− .9420470	+.3304022	+.1433691	Nov. 1	305	−.7688891	−.5746628	−.2493650
2	245	.9477653	.3156626	.1369727	2	306	.7576232	.5867567	.2546125
3	246	.9532105	.3008333	.1305375	3	307	.7461288	.5986726	.2597827
4	247	.9583811	.2859184	.1240652	4	308	.7344091	.6104071	.2648739
5	248	.9632757	.2709218	.1175578	5	309	.7224676	.6219568	.2698847
6	249	− .9678929	+.2558475	+.1110170	6	310	−.7103076	−.6333181	−.2748141
7	250	9722313	.2406996	.1044444	7	311	.6979323	.6444878	.2796607
8	251	.9762895	.2254823	.0978417	8	312	.6853448	.6554626	.2844229
9	252	.9800661	.2101998	.0912107	9	313	.6725483	.6662391	.2890984
10	253	.9835597	.1948559	.0845532	10	314	.6595462	.6768140	.2936863
11	254	− .9867691	+.1794545	+.0778708	11	315	−.6463418	−.6871832	−.2981855
12	255	.9896931	.1639998	.0711654	12	316	.6329388	.6973436	.3025946
13	256	.9923302	.1484962	.0644385	13	317	.6193410	.7072918	.3069119
14	257	.9946790	.1329479	.0576922	14	318	.6055523	.7170243	.3111354
15	258	.9967382	.1173595	.0509283	15	319	.5915766	.7265375	.3152636
16	259	− .9985065	+.1017355	+.0441489	16	320	−.5774183	−.7358281	−.3192953
17	260	.9999828	.0860805	.0373559	17	321	.5630815	.7448927	.3232294
18	261	1.0011660	.0703992	.0305514	18	322	.5485704	.7537280	.3270642
19	262	1.0020553	.0546962	.0237374	19	323	.5338896	.7623309	.3307980
20	263	1.0026501	.0389765	.0169161	20	324	.5190437	.7706987	.3344297
21	264	−1.0029498	+.0232452	+.0100895	21	325	−.5040378	−.7788285	−.3379579
22	265	1.0029539	+.0075071	+.0032597	22	326	.4888767	.7867176	.3413815
23	266	1.0026622	−.0082331	−.0035711	23	327	.4735651	.7943633	.3446993
24	267	1.0020746	.0239703	.0104008	24	328	.4581080	.8017630	.3479103
25	268	1.0011915	.0396998	.0172271	25	329	.4425107	.8089144	.3510135
26	269	−1.0000130	−.0554167	−.0240478	26	330	−.4267781	−.8158155	−.3540080
27	270	.9985392	.0711161	.0308608	27	331	.4109152	.8224641	.3568929
28	271	.9967708	.0867930	.0376639	28	332	.3949270	.8288584	.3596672
29	272	.9947084	.1024428	.0444552	29	333	.3788187	.8349968	.3623302
30	273	.9923529	.1180608	.0512326	30	334	.3625952	.8408776	.3648812
Oct. 1	274	− .9897050	−.1336425	−.0579942	Dec. 1	335	−.3462612	−.8464991	−.3673198
2	275	.9867655	.1491837	.0647381	2	336	.3298214	.8518598	.3696452
3	276	.9835352	.1646798	.0714623	3	337	.3132808	.8569581	.3718568
4	277	.9800152	.1801266	.0781650	4	338	.2966444	.8617924	.3739540
5	278	.9762065	.1955197	.0848443	5	339	.2799167	.8663613	.3759361
6	279	− .9721098	−.2108548	−.0914982	6	340	−.2631025	−.8706633	−.3778024
7	280	.9677260	.2261277	.0981247	7	341	.2462065	.8746971	.3795523
8	281	.9630562	.2413340	.1047223	8	342	.2292334	.8784612	.3811853
9	282	.9581015	.2564693	.1112893	9	343	.2121883	.8819541	.3827009
10	283	.9528627	.2715294	.1178238	10	344	.1950762	.8851754	.3840985
11	284	− .9473406	−.2865103	−.1243239	11	345	−.1779024	−.8881212	−.3853774
12	285	.9415362	.3014074	.1307876	12	346	.1606720	.8907928	.3865369
13	286	.9354508	.3162160	.1372130	13	347	.1433901	.8931879	.3875766
14	287	.9290858	.3309314	.1435981	14	348	.1260621	.8953053	.3884960
15	288	.9224423	.3455488	.1499409	15	349	.1086934	.8971440	.3892946
16	289	− .9155216	−.3600636	−.1562394	16	350	−.0912897	−.8987031	−.3899719
17	290	.9083254	.3744714	.1624916	17	351	.0738565	.8999820	.3905275
18	291	.9008555	.3887677	.1686954	18	352	.0563995	.9009799	.3909611
19	292	.8931137	.4029478	.1748490	19	353	.0389244	.9016963	.3912725
20	293	.8851021	.4170068	.1809503	20	354	.0214373	.9021308	.3914615
21	294	− .8768230	−.4309402	−.1869972	21	355	−.0039440	−.9022832	−.3915281
22	295	.8682791	.4447433	.1929875	22	356	+.0135501	.9021537	.3914723
23	296	.8594729	.4584117	.1989193	23	357	.0310391	.9017426	.3912940
24	297	.8504070	.4719410	.2047907	24	358	.0485172	.9010503	.3909934
25	298	.8410841	.4853268	.2105996	25	359	.0659787	.9000771	.3905706
26	299	− .8315071	−.4985645	−.2163443	26	360	+.0834180	−.8988235	−.3900260
27	300	.8216792	.5116500	.2220230	27	361	.1008297	.8972002	.3893601
28	301	.8116036	.5245793	.2276338	28	362	.1182085	.8954779	.3885731
29	302	.8012836	.5373489	.2331750	29	363	.1355489	.8933873	.3876653
30	303	.7907224	.5499552	.2386450	30	364	.1528457	.8910195	.3866373
31	304	− .7799232	−.5623944	−.2440422	31	365	+.1700938	−.8883759	−.3854805
32	305	− .7688891	−.5746628	−.2493650	32	366	+.1872883	−.8854575	−.3842225

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	312° 24′ 51″.6	−4° 50′ 28″.5	5° 42′ 19″.7	−4° 6′ 49″.7	14° 3′ 14″.1	−3° 26′ 39″.0
1.5	319 54 32.8	5 2 2.9	12 50 42.9	3 43 12.9	21 17 12.6	2 57 20.6
2.0	327 21 14.1	5 8 25.3	19 51 49.6	3 16 34.6	28 23 56.7	2 25 41.7
2.5	334 43 59.7	5 9 36.3	26 45 39.0	2 47 28.7	35 23 11.7	1 52 20.7
3.0	342 2 3.9	5 5 43.5	33 32 21.0	2 16 28.4	42 14 55.1	1 17 54.2
3.5	349 14 52.6	4 57 1.2	40 12 14.0	1 44 5.4	48 59 15.7	0 42 56.3
4.0	356 22 1.9	4 43 48.8	46 45 43.0	1 10 49.4	55 36 31.4	−0 7 58.0
4.5	3 23 19.2	4 26 29.5	53 13 17.8	0 37 8.2	62 7 7.6	+0 26 32.8
5.0	10 18 41.2	4 5 29.2	59 35 30.9	−0 3 27.1	68 31 34.9	1 0 11.7
5.5	17 8 12.7	3 41 15.4	68 52 56.6	+0 29 50.3	74 50 27.9	1 32 37.1
6.0	23 52 5.3	3 14 16.2	72 6 9.3	1 2 22.6	81 4 23.2	2 3 30.1
6.5	30 30 35.9	2 45 0.0	78 15 42.8	1 33 50.0	87 13 58.5	2 32 34.2
7.0	37 4 4.7	2 13 54.8	84 22 9.9	2 3 54.5	93 19 51.8	2 59 34.8
7.5	43 32 54.1	1 41 28.2	90 26 0.9	2 32 19.2	99 22 40.3	3 24 19.3
8.0	49 57 28.0	1 8 6.5	96 27 44.0	2 58 48.8	105 22 59.6	3 46 36 3
8.5	56 18 10.5	0 34 15.6	102 27 44.5	3 23 9.1	111 21 23.5	4 6 15.7
9.0	62 35 24.9	−0 0 19.7	108 26 25.2	3 45 7.2	117 18 23.1	4 23 8.5
9.5	68 49 33.2	+0 33 17.4	114 24 6.4	4 4 31.3	123 14 26.9	4 37 6.9
10.0	75 0 56.2	1 6 13.6	120 21 4.1	4 21 11.0	129 10 0.7	4 48 4.1
10.5	81 9 52.9	1 38 7.5	126 17 34.3	4 34 57.2	135 5 27.8	4 55 54.2
11.0	87 16 40.0	2 8 39.5	132 13 49.2	4 45 42.3	141 1 8.4	5 0 32.5
11.5	93 21 32.1	2 37 30.8	138 9 59.8	4 53 20.0	146 57 19.3	5 1 55.7
12.0	99 24 42.4	3 4 24.2	144 6 16.1	4 57 45.9	152 54 15.3	5 0 2.0
12.5	105 26 22.3	3 29 4.3	150 2 47.1	4 58 56.9	158 52 9.1	4 54 50.7
13.0	111 26 42.2	3 51 17.0	155 59 42.0	4 56 52.0	164 51 11.7	4 46 23.3
13.5	117 25 52.1	4 10 50.0	161 57 10.1	4 51 31.6	170 51 32.5	4 34 42.9
14.0	123 24 1.2	4 27 32.8	167 55 21.6	4 42 57.9	176 53 20.0	4 19 54.4
14.5	129 21 19.2	4 41 16.6	173 54 28.0	4 31 14.8	182 56 42.2	4 2 4.8
15.0	135 17 56.7	4 51 54.5	179 54 42.6	4 16 27.9	189 1 47.1	3 41 23.0
15.5	141 14 5.2	4 59 21.1	185 56 21.0	3 58 44.3	195 8 43.1	3 18 0.1
16.0	147 9 57.5	5 3 32.8	191 59 41.2	3 38 12.6	201 17 39.8	2 52 8.9
16.5	153 5 49.7	5 4 27.6	198 5 3.5	3 15 3.1	207 28 47.9	2 24 4.3
17.0	159 1 58.1	5 2 5.0	204 12 51.3	2 49 27.3	213 42 20.1	1 54 3.1
17.5	164 58 42.3	4 56 25.5	210 23 30.2	2 21 38.6	219 58 30.8	1 22 23.7
18.0	170 56 24.7	4 47 31.4	216 37 28.1	1 51 51.8	226 17 36.4	0 49 26.2
18.5	176 55 30.5	4 35 25.9	222 55 14.7	1 20 23.6	232 39 54.9	+0 15 32.6
19.0	182 56 27.0	4 20 13.5	229 17 21.1	0 47 32.4	239 5 45.9	−0 18 53.8
19.5	188 59 44.3	4 1 59.8	235 44 19.0	+0 13 38.9	245 35 30.0	0 53 28.0
20.0	195 5 54.3	3 40 51.7	242 16 39.5	−0 20 53.9	252 9 28.3	1 27 43.6
20.5	201 15 31.0	3 16 57.6	248 54 51.7	0 55 40.6	258 48 1.6	2 1 12.9
21.0	207 29 9.6	2 50 27.5	255 39 22.4	1 30 13.1	265 31 29.2	2 33 26.7
21.5	213 47 26.1	2 21 33.4	262 30 33.3	2 4 0.9	272 20 7.9	3 3 55.0
22.0	220 10 56.0	1 50 29.5	269 28 39.2	2 36 30.9	279 14 10.5	3 32 7.1
22.5	226 40 13.0	1 17 32.6	276 33 45.6	3 7 7.9	286 13 44.4	3 57 31.9
23.0	233 15 48.8	0 43 2.8	283 45 46.8	3 35 15.2	293 18 49.4	4 19 38.8
23.5	239 58 11.1	+0 7 23.4	291 4 24.9	4 0 16.2	300 29 17.5	4 37 58.7
24.0	246 47 41.3	−0 28 58.2	298 29 7.8	4 21 35.1	307 44 51.0	4 52 4.5
24.5	253 44 32.9	1 5 30.9	305 59 9.4	4 38 38.9	315 5 1.0	5 1 32.8
25.0	260 48 49.9	1 41 59.9	313 33 30.0	4 50 59.5	322 29 8.0	5 6 5.4
25.5	268 0 24.6	2 16 46.6	321 10 57.7	4 58 15.1	329 56 21.7	5 5 29.9
26.0	275 18 56.0	2 50 10.0	328 50 11.3	5 0 11.7	337 25 43.3	4 59 41.4
26.5	282 43 49.0	3 21 7.9	336 29 43.5	4 56 44.9	344 56 6.6	4 48 43.0
27.0	290 14 14.4	3 48 58.3	344 8 6.2	4 47 59.7	352 26 21.1	4 32 46.2
27.5	297 49 9.3	4 13 1.8	351 43 52.8	4 34 10.5	359 55 15.1	4 12 10.6
28.0	305 27 19.3	4 32 43.2	359 15 44.0	4 15 40.1	7 21 38.0	3 47 23.1
28.5	313 7 21.4	4 47 33.9	6 42 30.2	3 52 58.1	14 44 24.7	3 18 56.8
29.0	320 47 47.1	4 57 13.6	14 3 14.1	3 26 39.0	22 2 37.5	2 47 29.0
29.5	328 27 7.1	5 1 31.5	21 17 12.6	2 57 20.6	29 15 27.7	2 13 39.8
30.0	336 3 55.1	5 0 26.0	28 23 56.7	2 25 41.7	36 22 17.7	1 38 9.9
30.5	343 36 52.3	4 54 5.6	35 23 11.7	1 52 20.7	43 22 40.7	1 1 39.5
31.0	351 4 50.4	4 42 46.2	42 14 55.1	1 17 54.2	50 16 21.4	−0 24 46.5
31.5	358 26 53.2	−4 26 51.4	48 59 15.7	−0 42 56.3	57 3 15.1	+0 11 54.1

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	63° 43′ 25″.9	+0° 47′ 50″.7	97° 17′ 30″.4	+3° 36′ 30″.6	141° 42′ 36″.8	+5° 14′ 56″.2
1.5	70 17 7.4	1 22 35.8	103 30 54.3	4 0 13.1	147 40 5.3	5 14 32.0
2.0	76 44 39.3	1 55 45.7	109 40 17.6	4 20 53.0	153 36 46.8	5 10 45.5
2.5	83 6 27.3	2 27 0.1	115 46 9.9	4 38 23.1	159 33 15.3	5 3 39.3
3.0	89 23 1.3	2 56 2.2	121 49 2.8	4 52 38.2	165 30 5.3	4 53 17.4
3.5	95 34 54.4	3 22 37.9	127 49 29.3	5 3 34.7	171 27 52.0	4 39 44.1
4.0	101 42 42.0	3 46 35.7	133 48 3.9	5 11 10.0	177 27 10.7	4 23 4.8
4.5	107 47 0.5	4 7 46.0	139 45 21.4	5 15 22.7	183 28 36.2	4 3 26.0
5.0	113 48 26.7	4 26 0.9	145 41 56.5	5 16 12.3	189 32 42.1	3 40 55.2
5.5	119 47 36.8	4 41 13.8	151 38 23.5	5 13 39.0	195 40 0.6	3 15 41.8
6.0	125 45 6.4	4 53 19.3	157 35 15.8	5 7 43.9	201 51 1.9	2 47 56.8
6.5	131 41 30.2	5 2 13.1	163 33 5.6	4 58 28.8	208 6 13.5	2 17 53.7
7.0	137 37 20.7	5 7 51.4	169 32 23.4	4 45 56.8	214 25 59.4	1 45 48.2
7.5	143 33 8.0	5 10 11.7	175 33 37.6	4 30 12.0	220 50 39.5	1 11 59.3
8.0	149 29 19.7	5 9 12.4	181 37 14.6	4 11 20.0	227 20 29.0	0 36 48.6
8.5	155 26 21.4	5 4 52.7	187 43 38.0	3 49 28.1	233 55 38.0	+0 0 41.4
9.0	161 24 36.2	4 57 13.1	193 53 8.8	3 24 45.9	240 36 9.5	−0 35 54.2
9.5	167 24 24.0	4 46 15.8	200 6 4.0	2 57 25.0	247 22 0.8	1 12 26.9
10.0	172 26 2.4	4 32 4.2	206 22 38.7	2 27 39.6	254 13 2.4	1 48 23.1
10.5	179 29 46.4	4 14 43.8	212 43 3.8	1 55 46.8	261 8 57.6	2 23 7.2
11.0	185 35 48.6	3 54 22.0	219 7 26.8	1 22 6.3	268 9 22.7	2 56 2.9
11.5	191 44 19.2	3 31 8.3	225 35 51.0	0 47 1.3	275 13 48.3	3 26 34.2
12.0	197 55 26.6	3 5 14.7	232 8 16.3	+0 10 57.3	282 21 39.5	3 54 6.2
12.5	204 9 17.4	2 36 55.8	238 44 39.7	−0 25 37.5	289 32 17.1	4 18 7.0
13.0	210 25 56.7	2 6 28.4	245 24 55.1	1 2 12.7	296 44 59.0	4 38 8.5
13.5	216 45 28.9	1 34 11.7	252 8 52.9	1 38 16.1	303 59 1.9	4 53 47.2
14.0	223 7 57.9	1 0 27.4	258 56 21.5	2 13 14.9	311 13 42.6	5 4 45.5
14.5	229 33 27.3	+0 25 39.2	265 47 6.9	2 46 35.6	318 28 19.7	5 10 51.9
15.0	236 2 0.8	−0 9 47.3	272 40 54.3	3 17 45.5	325 42 14.8	5 12 1.1
15.5	242 33 42.3	0 45 25.0	279 37 26.6	3 46 12.9	332 54 53.3	5 8 14.2
16.0	249 8 36.1	1 20 45.5	286 36 25.7	4 11 28.6	340 5 45.4	4 59 38.0
16.5	255 46 46.4	1 55 19.4	293 37 33.2	4 33 5.8	347 14 26.1	4 46 25.0
17.0	262 28 18.3	2 28 36.8	300 40 30.4	4 50 41.5	354 20 35.6	4 28 52.1
17.5	269 13 16.3	3 0 8.0	307 44 58.1	5 3 56.1	1 23 59.0	4 7 20.7
18.0	276 1 43.9	3 29 23.0	314 50 37.4	5 12 35.1	8 24 25.7	3 42 15.1
18.5	282 53 43.7	3 55 53.1	321 57 8.7	5 16 28.3	15 21 48.8	3 14 2.7
19.0	289 49 16.1	4 19 10.9	329 4 12.9	5 15 30.8	22 16 4.6	2 43 12.7
19.5	296 48 18.7	4 38 50.4	336 11 30.6	5 9 42.7	29 7 11.7	2 10 15.8
20.0	303 50 46.2	4 54 28.3	343 18 42.5	4 59 9.3	35 55 9.8	1 35 43.3
20.5	310 56 28.8	5 5 44.4	350 25 28.8	4 44 1.0	42 40 0.3	1 0 7.2
21.0	318 5 12.0	5 12 22.0	357 31 29.7	4 24 33.2	49 21 44.5	−0 23 58.9
21.5	325 16 35.9	5 14 9.3	4 36 25.0	4 1 5.7	56 0 23.7	+0 12 10.7
22.0	332 30 15.1	5 10 59.4	11 39 54.6	3 34 2.8	62 35 59.0	0 47 51.8
22.5	339 45 38.7	5 2 51.1	18 41 37.8	3 3 52.4	69 8 30.8	1 22 36.1
23.0	347 2 10.7	4 49 49.7	25 41 14.1	2 31 5.4	75 37 59.2	1 55 57.2
23.5	354 19 10.2	4 32 6.6	32 38 23.4	1 56 15.3	82 4 24.1	2 27 31.1
24.0	1 35 53.6	4 9 59.9	39 32 46.2	1 19 56.6	88 27 45.5	2 56 55.8
24.5	8 51 35.0	3 43 54.0	46 24 3.6	0 42 44.9	94 48 3.6	3 23 52.7
25.0	16 5 28.0	3 14 18.1	53 11 58.8	−0 5 15.3	101 5 19.6	3 48 5.5
25.5	23 16 47.5	2 41 46.3	59 56 16.3	+0 31 58.1	107 19 36.1	4 9 21.0
26.0	30 24 50.8	2 6 55.4	66 36 43.3	1 8 23.1	113 30 57.9	4 27 28.8
26.5	37 29 0.2	1 30 24.5	73 13 9.9	1 43 29.9	119 39 31.2	4 42 21.1
27.0	44 28 42.6	0 52 52.9	79 45 29.3	2 16 51.8	125 45 25.6	4 53 52.6
27.5	51 23 31.9	−0 14 59.0	86 13 38.6	2 48 5.3	131 48 52.9	5 2 0.3
28.0	58 13 8.2	+0 22 40.8	92 37 38.3	3 16 50.4	137 50 8.0	5 6 43.4
28.5	64 57 19.3	0 59 32.7	98 57 33.0	3 42 50.5	143 49 29.1	5 8 2.5
29.0	71 35 59.4	1 35 6.5	105 13 31.7	4 5 52.3	149 47 17.1	5 6 0.0
29.5	78 9 10.1	2 8 55.9	111 25 46.8	4 25 45.5	155 43 55.7	5 0 30.5
30.0	84 36 59.0	2 40 38.4	117 34 34.7	4 42 22.6	161 39 51.5	4 52 5.4
30.5	90 59 39.6	3 9 55.0	123 40 15.1	4 55 38.5	167 35 34.1	4 40 23.4
31.0	97 17 30.4	3 36 30.6	129 43 11.2	5 5 30.1	173 31 35.3	4 25 39.9
31.5	103 30 54.3	+4 0 13.1	135 43 49.0	+5 11 56.0	179 28 28.9	+4 8 2.0

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	173° 31′ 35″.3	+1° 25′ 39″.9	218° 2′ 56″.2	+1° 5′ 41″.2	265° 27′ 33″.6	−3° 6′ 48″.3
1.5	179 28 28.9	4 8 2.0	224 16 14.1	+0 33 10.8	272 15 47.7	3 33 53.9
2.0	185 26 50.3	3 47 37.5	230 34 36.4	−0 0 10.0	279 11 23.5	3 58 20.6
2.5	191 27 16.3	3 24 35.2	236 58 39.5	0 34 0.0	286 14 25.7	4 19 36.5
3.0	197 30 24.6	2 59 5.2	243 28 57.0	1 7 55.2	293 24 47.3	4 37 10.3
3.5	203 36 52.6	2 31 19.0	250 5 57.9	1 41 29.3	300 42 8.6	4 50 32.5
4.0	209 47 17.1	2 1 29.7	256 50 4.8	2 14 12.8	308 5 55.8	4 59 16.9
4.5	216 2 13.9	1 29 52.3	263 41 33.1	2 45 34.1	315 35 21.1	5 3 1.7
5.0	222 22 16.2	0 56 44.1	270 40 28.2	3 14 59.3	323 9 24.0	5 1 32.3
5.5	228 47 53.9	+0 22 25.1	277 46 44.2	3 41 53.1	330 46 51.6	4 54 41.8
6.0	235 19 32.6	−0 12 41.6	285 0 2.6	4 5 39.7	338 26 23.6	4 42 32.6
6.5	241 57 32.2	0 48 9.9	292 19 51.5	4 25 44.9	346 6 33.5	4 25 16.8
7.0	248 42 5.7	1 23 30.3	299 45 25.1	4 41 36.6	353 45 54.2	4 3 15.4
7.5	255 33 17.5	1 58 11.0	307 15 45.0	4 52 47.6	1 23 1.5	3 36 58.1
8.0	262 31 3.1	2 31 36.7	314 49 41.5	4 58 56.9	8 56 38.0	3 7 1.4
8.5	269 35 7.4	3 3 11.0	322 25 57.1	4 59 51.3	16 25 36.1	2 34 6.2
9.0	276 45 4.4	3 32 16.4	330 3 8.8	4 55 26.2	23 49 0.2	1 58 56.1
9.5	284 0 17.4	3 58 16.3	337 39 52.8	4 45 46.6	31 6 7.8	1 22 15.4
10.0	291 19 59.9	4 20 36.0	345 14 48.3	4 31 6.4	38 16 29.9	0 44 46.9
10.5	298 43 16.5	4 38 44.9	352 46 41.0	4 11 47.5	45 19 50.9	−0 7 11.0
11.0	306 9 5.1	4 52 17.4	0 14 26.1	3 48 18.7	52 16 6.4	+0 29 55.7
11.5	313 36 19.4	5 0 54.7	7 37 10.7	3 21 13.7	59 5 22.9	1 6 0.7
12.0	321 3 52.2	5 4 25.6	14 54 14.2	2 51 9.3	65 47 54.7	1 40 35.9
12.5	328 30 37.7	5 2 46.7	22 5 9.6	2 18 44.3	72 24 2.9	2 13 17.3
13.0	335 55 34.5	4 56 2.7	29 9 41.8	1 44 36.9	78 54 13.3	2 43 44.7
13.5	343 17 48.0	4 44 25.5	36 7 47.2	1 9 24.2	85 18 55.1	3 11 41.6
14.0	350 36 32.1	4 28 13.9	42 59 31.3	−0 33 41.4	91 38 39.1	3 36 54.5
14.5	357 51 10.7	4 7 51.5	49 45 7.7	+0 1 59.0	97 53 56.5	3 59 12.4
15.0	5 1 16.9	3 43 46.3	56 24 54.9	0 37 7.3	104 5 19.1	4 18 26.8
15.5	12 6 33.4	3 16 28.7	62 59 16.1	1 11 16.8	110 13 17.9	4 34 30.8
16.0	19 6 52.0	2 46 30.9	69 28 36.6	1 44 3.7	116 18 22.0	4 47 19.6
16.5	26 2 12.0	2 14 26.1	75 53 22.9	2 15 6.9	122 20 59.0	4 56 49.8
17.0	32 52 38.5	1 40 47.1	82. 14 1.6	2 44 7.7	128 21 34.7	5 2 59.3
17.5	39 38 21.7	1 6 5.9	88 30 59.0	3 10 49.8	134 20 32.7	5 5 47.4
18.0	46 19 35.5	−0 30 53.5	94 44 39.9	3 34 59.1	140 18 14.2	5 5 14.8
18.5	52 56 35.1	+0 4 20.7	100 55 26.8	3 56 23.5	146 14 58.4	5 1 23.5
19.0	59 29 37.5	0 39 8.7	107 3 40.7	4 14 52.7	152 11 2.8	4 54 16.9
19.5	65 58 59.4	1 13 4.6	113 9 40.4	4 30 18.5	158 6 42.6	4 44 0.0
20.0	72 24 57.3	1 45 44.4	119 13 42.3	4 42 34.3	164 2 11.9	4 30 38.8
20.5	78 47 46.3	2 16 45.6	125 16 1.0	4 51 35.1	169 57 43.8	4 14 21.2
21.0	85 7 40.1	2 45 48.2	131 16 49.1	4 57 18.1	175 53 30.5	3 55 16.5
21.5	91 24 50.5	3 12 34.3	137 16 17.7	4 59 42.1	181 49 43.7	3 33 35.7
22.0	97 39 27.9	3 36 47.8	143 14 37.0	4 58 47.5	187 46 35.7	3 9 31.1
22.5	103 51 41.0	3 58 15.2	149 11 56.9	4 54 36.5	193 44 19.4	2 43 16.3
23.0	110 1 37.5	4 16 45.2	155 8 27.2	4 47 13.0	199 43 8.4	2 15 6.3
23.5	116 9 23.9	4 32 8.5	161 4 18.0	4 36 42.6	205 43 17.2	1 45 17.6
24.0	122 15 6.4	4 44 18.2	166 59 40.2	4 23 12.3	211 45 2.4	1 14 7.6
24.5	128 18 51.5	4 53 9.8	172 54 46.7	4 6 50.7	217 48 42.6	0 41 54.8
25.0	134 20 46.6	4 58 40.7	178 49 52.1	3 47 47.6	223 54 38.2	+0 8 59.9
25.5	140 21 0.0	5 0 50.6	184 45 12.9	3 26 13.9	230 3 11.3	−0 24 19.5
26.0	146 19 41.7	4 59 40.7	190 41 8.1	3 2 21.7	236 14 46.3	0 57 39.1
26.5	152 17 3.9	4 55 14.2	196 37 59.5	2 36 24.1	242 29 49.1	1 30 37.4
27.0	158 13 21.1	4 47 35.8	202 36 11.5	2 8 35.3	248 48 46.4	2 2 51.3
27.5	164 8 50.4	4 36 51.4	208 36 11.4	1 39 10.2	255 12 5.8	2 33 56.4
28.0	170 3 51.8	4 23 8.3	214 38 28.9	1 8 24.9	261 40 14.4	3 3 27.6
28.5	175 58 48.3	4 6 34.4	220 43 36.4	0 36 36.5	268 13 38.4	3 30 58.9
29.0	181 54 5.8	3 47 19.2	226 52 7.8	+0 4 3.2	274 52 41.4	3 56 4.0
29.5	187 50 13.1	3 25 32.4	233 4 38.6	−0 28 55.4	281 37 43.9	4 18 15.9
30.0	193 47 41.7	3 1 25.0	239 21 44.9	1 1 58.2	288 29 1.3	4 37 7.7
30.5	199 47 5.4	2 35 8.8	245 44 2.5	1 34 42.4	295 26 42.8	4 52 13.4
31.0	205 49 0.4	2 6 56.6	252 12 5.9	2 6 43.4	302 30 47.1	5 3 8.3
31.5	211 54 4.5	+1 37 2.2	258 46 26.9	−2 37 34.8	309 41 8.2	−5 9 30.3

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	302° 30′ 47″.1	−5° 3′ 8″.3	355° 51′ 31″.8	−3° 59′ 53″.7	34° 28′ 37″.3	−0° 56′ 55″.2
1.5	309 41 8.2	5 9 30.3	3 14 0.1	3 31 18.7	41 35 13.5	−0 18 6.0
2.0	316 57 25.9	5 11 1.1	10 37 20.8	2 59 8.2	48 40 4.0	+0 20 48.8
2.5	324 19 9.9	5 7 27.3	18 0 40.6	2 23 57.5	55 42 38.0	0 59 10.2
3.0	331 45 37.8	4 58 42.2	25 23 5.7	1 46 26.0	62 42 24.8	1 36 20.7
3.5	339 15 56.5	4 44 46.0	32 43 41.9	1 7 17.1	69 38 54.9	2 11 45.7
4.0	346 49 3.6	4 25 47.9	40 1 36.5	−0 27 15.5	76 31 40.7	2 44 54.0
4.5	354 23 49.2	4 2 5.5	47 16 0.6	+0 12 53.5	83 20 18.3	3 15 18.6
5.0	1 58 58.7	3 34 4.7	54 26 10.4	0 52 27.2	90 4 28.1	3 42 37.6
5.5	9 33 16.3	3 2 19.6	61 31 28.5	1 30 45.2	96 43 55.0	4 6 33.6
6.0	17 5 27.7	2 27 29.9	68 31 24.9	2 7 11.7	103 18 29.4	4 26 53.8
6.5	24 34 22.8	1 50 20.1	75 25 37.4	2 41 15.8	109 48 7.3	4 43 30.3
7.0	31 58 59.9	1 11 36.7	82 13 52.1	3 12 31.9	116 12 50.9	4 56 18.7
7.5	39 18 25.8	−0 32 6.6	88 56 3.3	3 40 39.9	122 32 48.0	5 5 18.2
8.0	46 31 58.5	+0 7 25.2	95 32 12.9	4 5 24.8	128 48 11.8	5 10 31.2
8.5	53 39 7.1	0 46 17.2	102 2 29.9	4 26 36.1	134 59 20.6	5 12 2.2
9.0	60 39 31.7	1 23 51.8	108 27 9.6	4 44 7.4	141 6 36.9	5 9 57.6
9.5	67 33 4.0	1 59 36.9	114 46 32.4	4 57 55.6	147 10 27.6	5 4 25.1
10.0	74 19 45.1	2 33 5.5	121 1 3.5	5 8 0.5	153 11 22.7	4 55 33.3
10.5	81 59 44.5	3 3 55.5	127 11 11.2	5 14 23.8	159 9 55.1	4 43 31.3
11.0	87 33 19.0	3 31 50.2	133 17 27.0	5 17 9.0	165 6 40.1	4 28 29.3
11.5	94 0 51.1	3 56 36.0	139 20 24.3	5 16 20.9	171 2 14.6	4 10 37.6
12.0	100 22 47.7	4 18 3.7	145 20 37.6	5 12 5.2	176 57 16.5	3 50 6.8
12.5	106 39 38.9	4 36 7.3	151 18 42.1	5 4 28.4	182 52 24.5	3 27 8.0
13.0	112 51 56.6	4 50 42.6	157 15 13.4	4 53 37.7	188 48 17.3	3 1 53.0
13.5	119 0 14.2	5 1 47.7	163 10 46.6	4 39 40.8	194 45 33.3	2 34 34.2
14.0	125 5 5.3	5 9 22.3	169 5 56.4	4 22 46.0	200 44 49.5	2 5 25.4
14.5	131 7 3.2	5 13 27.4	175 1 16.2	4 3 2.5	206 46 41.2	1 34 41.2
15.0	137 6 40.6	5 14 5.1	180 57 17.6	3 40 40.3	212 51 41.6	1 2 38.0
15.5	143 4 29.0	5 11 18.5	186 54 30.4	3 15 50.7	219 0 21.0	+0 29 33.8
16.0	149 0 58.4	5 5 11.8	192 53 22.4	2 48 46.0	225 13 6.0	−0 4 11.3
16.5	154 56 37.0	4 55 49.9	198 54 18.8	2 19 40.2	231 30 19.0	0 38 15.2
17.0	160 51 51.1	4 43 18.7	204 57 42.2	1 48 48.8	237 52 17.5	1 12 13.7
17.5	166 47 5.0	4 27 45.4	211 3 52.3	1 16 29.3	244 19 13.6	1 45 40.5
18.0	172 42 40.9	4 9 18.2	217 13 5.7	0 43 1.0	250 51 13.4	2 18 7.8
18.5	178 38 58.9	3 48 6.8	223 25 35.8	+0 8 45.2	257 28 16.7	2 49 6.1
19.0	184 36 17.1	3 24 22.4	229 41 32.8	−0 25 54.9	264 10 16.7	3 18 5.5
19.5	190 34 52.0	2 58 17.7	236 1 4.0	1 0 34.5	270 57 0.1	3 44 35.9
20.0	196 34 58.3	2 30 7.1	242 24 13.6	1 34 47.4	277 48 7.7	4 8 8.0
20.5	202 36 49.0	2 0 6.5	248 51 2.9	2 8 6.1	284 43 13.8	4 28 14.7
21.0	208 40 36.1	1 28 33.5	255 21 30.7	2 40 2.7	291 41 49.1	4 44 31.4
21.5	214 46 30.8	0 55 47.5	261 55 33.0	3 10 8.9	298 43 20.6	4 56 37.3
22.0	220 54 43.9	+0 22 9.1	268 33 4.2	3 37 57.1	305 47 13.1	5 4 16.1
22.5	227 5 25.7	−0 11 59.6	275 13 57.2	4 3 0.5	312 52 50.8	5 7 16.9
23.0	233 18 46.6	0 46 15.5	281 58 3.3	4 24 53.9	319 59 38.6	5 5 33.9
23.5	239 34 57.2	1 20 14.3	288 45 13.1	4 43 14.3	327 7 3.2	4 59 7.2
24.0	245 54 8.7	1 53 31.1	295 35 16.5	4 57 41.4	334 14 34.7	4 48 2.6
24.5	252 16 32.5	2 25 40.8	302 28 3.0	5 7 57.9	341 21 46.8	4 32 30.9
25.0	258 42 20.7	2 56 17.8	309 23 22.2	5 13 50.1	348 28 17.7	4 12 47.9
25.5	265 11 45.6	3 24 56.2	316 21 3.1	5 15 8.4	355 33 49.1	3 49 13.9
26.0	271 44 59.2	3 51 10.7	323 20 54.9	5 11 47.2	2 38 7.2	3 22 12.9
26.5	278 22 13.5	4 14 36.8	330 22 46.0	5 3 45.3	9 41 1.8	2 52 12.1
27.0	285 3 39.1	4 34 50.7	337 26 24.7	4 51 6.4	16 42 25.6	2 19 40.9
27.5	291 49 24.9	4 51 29.6	346 31 38.1	4 33 58.8	23 42 13.0	1 45 11.5
28.0	298 39 37.8	5 4 12.7	351 38 11.9	4 12 35.8	30 40 20.0	1 9 16.4
28.5	305 34 21.3	5 12 41.2	358 45 50.4	3 47 15.3	37 36 42.6	−0 32 29.7
29.0	312 33 35.3	5 16 39.3	5 54 16.1	3 18 20.2	44 31 16.9	+0 4 34.5
29.5	319 37 14.0	5 15 54.6	13 3 9.1	2 46 17.8	51 23 57.8	0 41 22.3
30.0	326 45 7.0	5 10 19.1	20 12 7.2	2 11 39.3	58 14 38.4	1 17 20.9
30.5	333 56 56.8	4 59 49.3	27 20 45.6	1 34 59.3	65 3 10.5	1 51 58.9
31.0	341 12 19.2	4 44 28.1	34 28 37.3	0 56 55.2	71 49 24.0	2 24 47.2
31.5	348 30 43.4	−4 24 24.4	41 35 13.5	−0 18 6.0	78 33 6.9	+2 55 18.8

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

Mean Noon.	Apparent Obliquity.	Equation of Equinoxes. In Longitude.	Equation of Equinoxes. In R. A.	Precession of Equinoxes in Longitude.	The Sun's Aberration.	The Sun's Hor. Parallax.	Mean Longitude of Moon's Ascending Node.
1873.	23° 27′						
Jan. 0	24″.25	−14″.50	−0s.89	0″.00	−20″.80	9″.00	61° 21′.2
10	24.41	14.01	0.86	1.38	20.79	9.00	60 49.4
20	24.62	13.62	0.83	2.75	20.77	8.99	60 17.6
30	24.87	13.37	0.82	4.13	20.74	8.98	59 45.8
Feb 9	25.12	13.29	0.81	5.50	20.71	8.96	59 14.1
19	25.36	13.36	0.82	6.88	−20.67	8.94	58 42.3
Mar. 1	25.57	13.56	0.83	8.26	20.63	8.92	58 10.5
11	25.71	13.85	0.85	9.63	20.57	8.90	57 38.7
21	25.80	14.20	0.87	11.01	20.51	8.87	57 7.0
31	25.82	14.53	0.89	12.38	20.45	8.85	56 35.2
Apr. 10	25.78	14.81	0.91	13.76	−20.39	8.82	56 3.4
20	25.69	15.00	0.92	15.14	20.34	8.80	55 31.6
30	25.57	15.05	0.92	16.51	20.29	8.78	54 59.9
May 10	25.44	14.97	0.92	17.89	20.24	8.76	54 28.1
20	25.32	14.75	0.90	19.26	20.19	8.74	53 56.4
30	25.23	14.41	0.88	20.64	−20.16	8.72	53 24.6
June 9	25.19	13.98	0.86	22.02	20.13	8.71	52 52.9
19	25.20	13.50	0.85	23.39	20.11	8.71	52 21.1
29	25.28	13.01	0.80	24.77	20.11	8.70	51 49.3
July 9	25.40	12.56	0.77	26.14	20.10	8.70	51 17.5
19	25.58	12.18	0.75	27.52	−20.12	8.71	50 45.8
29	25.80	11.91	0.73	28.90	20.14	8.72	50 14.0
Aug. 8	26.03	11.77	0.72	30.27	20.17	8.73	49 42.2
18	26.26	11.77	0.72	31.65	20.20	8.75	49 10.4
28	26.47	11.90	0.73	33.02	20.24	8.77	48 38.7
Sept. 7	26.63	12.13	0.74	34.40	−20.29	8.79	48 6.9
17	26.74	12.43	0.76	35.78	20.35	8.81	47 35.1
27	26.79	12.76	0.78	37.15	20.41	8.84	47 3.3
Oct. 7	26.78	13.06	0.80	38.53	20.47	8.87	46 31.6
17	26.70	13.29	0.81	39.90	20.53	8.88	45 59.8
27	26.59	13.40	0.81	41.28	−20.59	8.91	45 28.0
Nov. 6	26.45	13.36	0.81	42.66	20.64	8.93	44 56.2
16	26.30	13.15	0.80	44.03	20.69	8.95	44 24.5
26	26.17	12.82	0.78	45.41	20.73	8.97	43 52.7
Dec. 6	26.09	12.34	0.75	46.78	20.76	8.98	43 20.9
16	26.07	11.78	0.72	48.16	−20.78	8.99	42 49.1
26	26.11	11.18	0.68	49.54	20.79	9.00	42 17.4
36	26.22	−10.61	−0.65	50.91	−20.79	9.00	41 45.6

Mean Obliquity, 1873.0, 23° 27′ 20″.31 Motion in 100 days, −0″.1272
Precession for 1873.5, . . . 50″.2577 Log. 1.70120
Precession in a Solar Day, . 0″.13760 Log. 9.13861
Precession in a Sidereal Day, 0″.13722 Log. 9.13742
Sun's Mean Hor. Parallax, . 8″.848

Daily Motion.

−3′.177

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1873.0, TO APPARENT PLACES.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Jan. 1	n 9.4489	n 0.5987	n 0.5893	1.3011	Mar. 1	n 9.0116	n 0.7282	n 1.2507	0.8068
2	9.4430	0.6004	0.6243	1.2994	2	9.0022	0.7297	1.2531	0.7831
3	9.4371	0.6022	0.6566	1.2975	3	8.9926	0.7312	1.2554	0.7579
4	9.4312	0.6040	0.6864	1.2955	4	8.9829	0.7326	1.2575	0.7308
5	9.4251	0.6059	0.7142	1.2934	5	8.9730	0.7339	1.2595	0.7021
6	n 9.4191	n 0.6079	n 0.7403	1.2911	6	n 8.9630	n 0.7352	n 1.2614	0.6711
7	9.4129	0.6098	0.7647	1.2886	7	8.9527	0.7364	1.2631	0.6376
8	9.4067	0.6119	0.7877	1.2860	8	8.9424	0.7376	1.2647	0.6013
9	9.4005	0.6140	0.8094	1.2833	9	8.9318	0.7388	1.2661	0.5614
10	9.3942	0.6161	0.8299	1.2804	10	8.9210	0.7398	1.2674	0.5175
11	n 9.3878	n 0.6183	n 0.8494	1.2773	11	n 8.9099	n 0.7409	n 1.2686	0.4684
12	9.3814	0.6205	0.8679	1.2741	12	8.8987	0.7418	1.2696	0.4139
13	9.3750	0.6228	0.8855	1.2707	13	8.8872	0.7427	1.2705	0.3493
14	9.3685	0.6251	0.9023	1.2672	14	8.8754	0.7436	1.2713	0.2746
15	9.3619	0.6274	0.9183	1.2634	15	8.8633	0.7444	1.2719	0.1845
16	n 9.3553	n 0.6298	n 0.9337	1.2595	16	n 8.8509	n 0.7452	n 1.2724	0.0697
17	9.3486	0.6321	0.9483	1.2555	17	8.8381	0.7459	1.2728	9.9138
18	9.3419	0.6346	0.9624	1.2512	18	8.8250	0.7466	1.2730	9.6682
19	9.3351	0.6370	0.9758	1.2468	19	8.8114	0.7472	1.2731	p 9.0441
20	9.3283	0.6395	0.9888	1.2422	20	8.7975	0.7477	1.2731	n 9.3828
21	n 9.3214	n 0.6419	n 1.0012	1.2375	21	n 8.7831	n 0.7482	n 1.2729	n 9.7749
22	9.3145	0.6444	1.0132	1.2325	22	8.7683	0.7486	1.2727	9.9772
23	9.3075	0.6469	1.0246	1.2273	23	8.7528	0.7490	1.2722	0.1145
24	9.3005	0.6494	1.0357	1.2220	24	8.7368	0.7494	1.2717	0.2185
25	9.2934	0.6520	1.0463	1.2164	25	8.7201	0.7496	1.2710	0.3022
26	n 9.2863	n 0.6545	n 1.0566	1.2106	26	n 8.7026	n 0.7499	n 1.2702	n 0.3722
27	9.2792	0.6570	1.0665	1.2046	27	8.6843	0.7501	1.2693	0.4323
28	9.2719	0.6595	1.0760	1.1984	28	8.6652	0.7502	1.2682	0.4850
29	9.2647	0.6620	1.0852	1.1920	29	8.6451	0.7503	1.2670	0.5318
30	9.2574	0.6645	1.0941	1.1853	30	8.6240	0.7504	1.2657	0.5739
31	n 9.2500	n 0.6671	n 1.1026	1.1784	31	n 8.6016	n 0.7504	n 1.2642	n 0.6122
Feb. 1	9.2426	0.6695	1.1109	1.1712	Apr. 1	8.5781	0.7503	1.2626	0.6472
2	9.2351	0.6720	1.1188	1.1638	2	8.5529	0.7502	1.2609	0.6795
3	9.2276	0.6745	1.1265	1.1561	3	8.5261	0.7501	1.2590	0.7093
4	9.2201	0.6769	1.1339	1.1481	4	8.4972	0.7499	1.2570	0.7372
5	n 9.2125	n 0.6794	n 1.1411	1.1399	5	n 8.4660	n 0.7497	n 1.2549	n 0.7633
6	9.2048	0.6818	1.1480	1.1313	6	8.4320	0.7494	1.2526	0.7877
7	9.1971	0.6842	1.1546	1.1225	7	8.3948	0.7491	1.2502	0.8107
8	9.1894	0.6866	1.1610	1.1133	8	8.3537	0.7487	1.2477	0.8324
9	9.1816	0.6889	1.1672	1.1038	9	8.3081	0.7484	1.2450	0.8529
10	n 9.1738	n 0.6912	n 1.1732	1.0940	10	n 8.2570	n 0.7479	n 1.2421	n 0.8724
11	9.1659	0.6935	1.1789	1.0837	11	8.1989	0.7475	1.2392	0.8909
12	9.1579	0.6958	1.1845	1.0732	12	8.1307	0.7470	1.2360	0.9085
13	9.1499	0.6980	1.1898	1.0622	13	8.0488	0.7464	1.2328	0.9253
14	9.1418	0.7002	1.1950	1.0508	14	7.9469	0.7459	1.2293	0.9413
15	n 9.1337	n 0.7024	n 1.1999	1.0389	15	n 7.8122	n 0.7453	n 1.2258	n 0.9566
16	9.1255	0.7045	1.2046	1.0266	16	7.6107	0.7446	1.2220	0.9713
17	9.1172	0.7066	1.2092	1.0138	17	n 7.2201	0.7440	1.2181	0.9854
18	9.1089	0.7086	1.2136	1.0005	18	p 6.8921	0.7433	1.2141	0.9989
19	9.1004	0.7106	1.2178	0.9866	19	7.5105	0.7426	1.2099	1.0119
20	n 9.0920	n 0.7126	n 1.2218	0.9721	20	7.7581	n 0.7418	n 1.2055	n 1.0243
21	9.0834	0.7145	1.2257	0.9571	21	7.9159	0.7410	1.2009	1.0363
22	9.0748	0.7164	1.2294	0.9413	22	8.0326	0.7403	1.1962	1.0478
23	9.0661	0.7182	1.2329	0.9248	23	8.1255	0.7394	1.1913	1.0590
24	9.0573	0.7200	1.2362	0.9075	24	8.2025	0.7386	1.1862	1.0697
25	n 9.0484	n 0.7217	n 1.2394	0.8894	25	8.2686	n 0.7378	n 1.1810	n 1.0800
26	9.0394	0.7234	1.2425	0.8703	26	8.3265	0.7369	1.1755	1.0899
27	9.0302	0.7251	1.2454	0.8503	27	8.3782	0.7360	1.1698	1.0995
28	9.0210	0.7267	1.2481	0.8291	28	8.4247	0.7351	1.1640	1.1088
29	9.0116	0.7282	1.2507	0.8068	29	8.4672	0.7342	1.1580	1.1178
30	n 9.0022	n 0.7297	n 1.2531	0.7831	30	8.5062	n 0.7333	n 1.1517	n 1.1264
31	n 8.9926	n 0.7312	n 1.2554	0.7579	31	8.5423	n 0.7323	n 1.1453	n 1.1348

January 1 to July 1, E = − 0″.04.

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1873.0, TO APPARENT PLACES.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
May 1	8.5423	*n* 0.7323	*n* 1.1453	*n* 1.1348	July 1	9.3890	*n* 0.7187	0.5264	*n* 1.3035
2	8.5760	0.7314	1.1386	1.1428	2	9.3954	0.7198	0.5645	1.3021
3	8.6076	0.7305	1.1317	1.1506	3	9.4018	0.7209	0.5992	1.3006
4	8.6373	0.7295	1.1245	1.1581	4	9.4080	0.7221	0.6313	1.2990
5	8.6655	0.7286	1.1171	1.1654	5	9.4141	0.7233	0.6610	1.2972
6	8.6922	*n* 0.7276	*n* 1.1095	*n* 1.1724	6	9.4201	*n* 0.7246	0.6887	*n* 1.2953
7	8.7176	0.7267	1.1016	1.1792	7	9.4261	0.7259	0.7147	1.2933
8	8.7417	0.7257	1.0934	1.1858	8	9.4319	0.7272	0.7390	1.2912
9	8.7648	0.7248	1.0849	1.1921	9	9.4376	0.7286	0.7620	1.2889
10	8.7869	0.7238	1.0762	1.1983	10	9.4432	0.7300	0.7837	1.2865
11	8.8081	*n* 0.7229	*n* 1.0672	*n* 1.2042	11	9.4487	*n* 0.7315	0.8042	*n* 1.2840
12	8.8285	0.7220	1.0577	1.2099	12	9.4541	0.7329	0.8238	1.2813
13	8.8481	0.7211	1.0481	1.2154	13	9.4595	0.7344	0.8423	1.2785
14	8.8671	0.7202	1.0381	1.2207	14	9.4647	0.7360	0.8600	1.2755
15	8.8855	0.7193	1.0277	1.2259	15	9.4698	0.7375	0.8769	1.2724
16	8.9032	*n* 0.7185	*n* 1.0170	*n* 1.2308	16	9.4749	*n* 0.7391	0.8930	*n* 1.2692
17	8.9204	0.7176	1.0058	1.2356	17	9.4798	0.7407	0.9084	1.2658
18	8.9371	0.7168	0.9943	1.2402	18	9.4847	0.7424	0.9232	1.2622
19	8.9532	0.7160	0.9823	1.2446	19	9.4895	0.7440	0.9374	1.2585
20	8.9689	0.7152	0.9698	1.2489	20	9.4942	0.7457	0.9511	1.2547
21	8.9841	*n* 0.7145	*n* 0.9569	*n* 1.2530	21	9.4988	*n* 0.7474	0.9642	*n* 1.2507
22	8.9989	0.7137	0.9434	1.2569	22	9.5034	0.7491	0.9768	1.2465
23	9.0133	0.7130	0.9294	1.2607	23	9.5078	0.7509	0.9889	1.2422
24	9.0274	0.7124	0.9147	1.2643	24	9.5122	0.7526	1.0006	1.2377
25	9.0411	0.7117	0.8995	1.2678	25	9.5165	0.7544	1.0118	1.2331
26	9.0545	*n* 0.7111	*n* 0.8836	*n* 1.2711	26	9.5208	*n* 0.7561	1.0227	*n* 1.2282
27	9.0675	0.7105	0.8669	1.2743	27	9.5249	0.7579	1.0332	1.2232
28	9.0803	0.7100	0.8495	1.2773	28	9.5290	0.7597	1.0433	1.2180
29	9.0927	0.7095	0.8312	1.2802	29	9.5330	0.7615	1.0531	1.2126
30	9.1048	0.7090	0.8120	1.2829	30	9.5370	0.7633	1.0625	1.2071
31	9.1169	*n* 0.7086	*n* 0.7918	*n* 1.2855	31	9.5409	*n* 0.7652	1.0717	*n* 1.2013
June 1	9.1285	0.7082	0.7704	1.2880	Aug. 1	9.5447	0.7670	1.0805	1.1954
2	9.1398	0.7079	0.7479	1.2904	2	9.5484	0.7688	1.0890	1.1892
3	9.1509	0.7076	0.7240	1.2925	3	9.5521	0.7706	1.0972	1.1828
4	9.1618	0.7073	0.6986	1.2946	4	9.5557	0.7724	1.1052	1.1762
5	9.1726	*n* 0.7071	*n* 0.6713	*n* 1.2966	5	9.5593	*n* 0.7742	1.1129	*n* 1.1693
6	9.1831	0.7069	0.6423	1.2984	6	9.5628	0.7760	1.1204	1.1622
7	9.1933	0.7068	0.6110	1.3000	7	9.5662	0.7778	1.1276	1.1549
8	9.2034	0.7067	0.5772	1.3016	8	9.5696	0.7796	1.1346	1.1474
9	9.2132	0.7067	0.5404	1.3030	9	9.5729	0.7813	1.1414	1.1395
10	9.2228	*n* 0.7067	*n* 0.5001	*n* 1.3043	10	9.5762	*n* 0.7831	1.1479	*n* 1.1314
11	9.2323	0.7068	0.4555	1.3055	11	9.5794	0.7848	1.1542	1.1230
12	9.2416	0.7070	0.4056	1.3065	12	9.5825	0.7866	1.1604	1.1144
13	9.2507	0.7071	0.3492	1.3075	13	9.5856	0.7883	1.1663	1.1054
14	9.2596	0.7074	0.2842	1.3083	14	9.5886	0.7900	1.1720	1.0961
15	9.2684	*n* 0.7077	*n* 0.2077	*n* 1.3090	15	9.5916	*n* 0.7917	1.1775	*n* 1.0865
16	9.2770	0.7080	0.1146	1.3095	16	9.5946	0.7933	1.1828	1.0765
17	9.2854	0.7083	9.9956	1.3100	17	9.5975	0.7950	1.1880	1.0661
18	9.2937	0.7087	9.8314	1.3103	18	9.6003	0.7966	1.1929	1.0554
19	9.3019	0.7092	9.5633	1.3105	19	9.6031	0.7982	1.1977	1.0443
20	9.3099	*n* 0.7097	*n* 8.7237	*n* 1.3106	20	9.6058	*n* 0.7998	1.2023	*n* 1.0327
21	9.3177	0.7102	*p* 9.4115	1.3106	21	9.6085	0.8013	1.2068	1.0207
22	9.3255	0.7108	9.7561	1.3104	22	9.6112	0.8029	1.2111	1.0083
23	9.3330	0.7115	9.9455	1.3101	23	9.6138	0.8044	1.2152	0.9953
24	9.3405	0.7122	0.0770	1.3097	24	9.6165	0.8058	1.2192	0.9818
25	9.3478	*n* 0.7130	0.1776	*n* 1.3092	25	9.6190	*n* 0.8073	1.2230	*n* 0.9677
26	9.3549	0.7139	0.2591	1.3085	26	9.6215	0.8087	1.2266	0.9530
27	9.3620	0.7147	0.3276	1.3078	27	9.6240	0.8101	1.2301	0.9377
28	9.3689	0.7156	0.3867	1.3069	28	9.6264	0.8114	1.2335	0.9217
29	9.3757	0.7166	0.4386	1.3059	29	9.6288	0.8127	1.2367	0.9049
30	9.3824	*n* 0.7176	0.4848	*n* 1.3048	30	9.6312	*n* 0.8141	1.2398	*n* 0.8873
31	9.3890	*n* 0.7187	0.5264	*n* 1.3035	31	9.6335	*n* 0.8153	1.2427	*n* 0.8688

January 1 to July 1, E = —0″.04. **July 1 to December 32, E = —0″.03.**

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1873.0, TO APPARENT PLACES.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Sept. 1	9.6358	n 0.8165	1.2455	n 0.8495	Nov. 1	9.7571	n 0.8191	1.1581	1.1177
2	9.6381	0.8177	1.2481	0.8290	2	9.7592	0.8182	1.1516	1.1266
3	9.6403	0.8188	1.2506	0.8073	3	9.7614	0.8173	1.1449	1.1352
4	9.6425	0.8200	1.2530	0.7844	4	9.7636	0.8164	1.1380	1.1436
5	9.6447	0.8210	1.2552	0.7601	5	9.7658	0.8155	1.1308	1.1516
6	9.6469	n 0.8221	1.2573	n 0.7342	6	9.7680	n 0.8146	1.1233	1.1594
7	9.6490	0.8231	1.2592	0.7065	7	9.7702	0.8137	1.1156	1.1669
8	9.6512	0.8240	1.2611	0.6767	8	9.7724	0.8128	1.1076	1.1742
9	9.6532	0.8250	1.2628	0.6447	9	9.7747	0.8119	1.0993	1.1812
10	9.6553	0.8258	1.2643	0.6098	10	9.7769	0.8110	1.0907	1.1880
11	9.6574	n 0.8267	1.2658	n 0.5718	11	9.7792	n 0.8101	1.0818	1.1945
12	9.6594	0.8275	1.2671	0.5300	12	9.7815	0.8092	1.0725	1.2008
13	9.6614	0.8282	1.2683	0.4836	13	9.7838	0.8084	1.0629	1.2069
14	9.6634	0.8290	1.2693	0.4314	14	9.7861	0.8075	1.0530	1.2128
15	9.6654	0.8296	1.2702	0.3720	15	9.7884	0.8066	1.0427	1.2184
16	9.6674	n 0.8303	1.2710	n 0.3028	16	9.7907	n 0.8058	1.0320	1.2239
17	9.6693	0.8309	1.2717	0.2204	17	9.7930	0.8049	1.0208	1.2291
18	9.6713	0.8315	1.2722	0.1193	18	9.7954	0.8041	1.0093	1.2342
19	9.6732	0.8320	1.2726	9.9843	19	9.7977	0.8033	0.9973	1.2391
20	9.6751	0.8324	1.2729	9.7892	20	9.8001	0.8025	0.9847	1.2438
21	9.6770	n 0.8329	1.2731	n 9.4248	21	9.8024	n 0.8017	0.9717	1.2483
22	9.6789	0.8333	1.2731	p 8.9057	22	9.8048	0.8010	0.9581	1.2526
23	9.6808	0.8336	1.2730	9.6366	23	9.8072	0.8002	0.9440	1.2568
24	9.6827	0.8339	1.2728	9.8939	24	9.8095	0.7995	0.9292	1.2607
25	9.6846	0.8342	1.2725	0.0542	25	9.8119	0.7989	0.9138	1.2646
26	9.6865	n 0.8344	1.2720	0.1711	26	9.8143	n 0.7982	0.8976	1.2682
27	9.6883	0.8346	1.2714	0.2630	27	9.8167	0.7976	0.8807	1.2717
28	9.6902	0.8347	1.2706	0.3388	28	9.8191	0.7970	0.8629	1.2750
29	9.6921	0.8348	1.2698	0.4032	29	9.8215	0.7964	0.8442	1.2782
30	9.6939	0.8349	1.2688	0.4592	30	9.8239	0.7959	0.8245	1.2812
Oct. 1	9.6958	n 0.8349	1.2676	0.5086	Dec. 1	9.8263	n 0.7954	0.8039	1.2840
2	9.6977	0.8349	1.2664	0.5530	2	9.8287	0.7950	0.7819	1.2867
3	9.6995	0.8348	1.2650	0.5932	3	9.8311	0.7946	0.7587	1.2893
4	9.7014	0.8347	1.2635	0.6298	4	9.8335	0.7942	0.7340	1.2917
5	9.7033	0.8346	1.2618	0.6635	5	9.8359	0.7939	0.7076	1.2939
6	9.7051	n 0.8344	1.2600	0.6946	6	9.8383	n 0.7936	0.6794	1.2960
7	9.7070	0.8342	1.2581	0.7236	7	9.8406	0.7933	0.6491	1.2980
8	9.7089	0.8340	1.2560	0.7506	8	9.8430	0.7931	0.6162	1.2998
9	9.7108	0.8337	1.2538	0.7759	9	9.8454	0.7929	0.5806	1.3015
10	9.7127	0.8334	1.2514	0.7998	10	9.8478	0.7928	0.5417	1.3030
11	9.7146	n 0.8330	1.2489	0.8223	11	9.8502	n 0.7927	0.4990	1.3044
12	9.7165	0.8326	1.2463	0.8436	12	9.8525	0.7927	0.4512	1.3056
13	9.7184	0.8322	1.2435	0.8638	13	9.8549	0.7927	0.3974	1.3067
14	9.7204	0.8317	1.2405	0.8829	14	9.8572	0.7927	0.3357	1.3077
15	9.7223	0.8312	1.2374	0.9011	15	9.8596	0.7928	0.2636	1.3085
16	9.7243	n 0.8307	1.2341	0.9186	16	9.8619	n 0.7930	0.1769	1.3092
17	9.7262	0.8302	1.2307	0.9351	17	9.8642	0.7932	0.0683	1.3097
18	9.7282	0.8296	1.2271	0.9510	18	9.8666	0.7935	9.9230	1.3102
19	9.7302	0.8290	1.2234	0.9662	19	9.8689	0.7938	9.7025	1.3104
20	9.7322	0.8284	1.2195	0.9808	20	9.8711	0.7941	p 9.2350	1.3106
21	9.7342	n 0.8277	1.2154	0.9948	21	9.8734	n 0.7945	n 9.2160	1.3106
22	9.7362	0.8270	1.2112	1.0082	22	9.8757	0.7949	9.6953	1.3104
23	9.7382	0.8263	1.2067	1.0211	23	9.8780	0.7954	9.9186	1.3102
24	9.7403	0.8256	1.2021	1.0335	24	9.8802	0.7960	0.0654	1.3097
25	9.7423	0.8248	1.1973	1.0454	25	9.8824	0.7965	0.1747	1.3092
26	9.7444	n 0.8241	1.1923	1.0569	26	9.8847	n 0.7972	n 0.2619	1.3085
27	9.7465	0.8233	1.1871	1.0679	27	9.8869	0.7978	0.3343	1.3077
28	9.7486	0.8225	1.1817	1.0786	28	9.8890	0.7985	0.3963	1.3067
29	9.7507	0.8217	1.1761	1.0889	29	9.8912	0.7993	0.4514	1.3056
30	9.7528	0.8208	1.1703	1.0988	30	9.8934	0.8001	0.4984	1.3044
31	9.7549	n 0.8200	1.1643	1.1084	31	9.8955	n 0.8010	n 0.5414	1.3030
32	9.7571	n 0.8191	1.1581	1.1177	32	9.8976	n 0.8019	n 0.5805	1.3014

July 1 to December 32, E = —0″.03.

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1873.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
Jan. 1	0.0053	—12.99	0.8385	215 9	1.3091	349 1	*n* 0.2267	—1.69	—0.866	14 20.6	23 16.0
2	.0080	12.82	0.8352	215 37	1.3089	348 4	.2617	1.83	0.855	14 22.5	23 12.3
h 3	.0108	12.65	0.8319	216 6	1.3086	347 7	.2940	1.97	0.843	14 24.4	23 8.5
(7.0) 4	.0135	12.47	0.8287	216 36	1.3083	346 11	.3238	2.11	0.832	14 26.4	23 4.7
5	.0163	12.30	0.8255	217 6	1.3079	345 14	.3516	2.25	0.820	14 28.4	23 0.9
6	.0190	—12.13	0.8224	217 36	1.3076	344 17	*n* 0.3777	—2.39	—0.809	14 30.4	22 57.1
7	.0217	11.96	0.8193	218 7	1.3072	343 20	.4021	2.52	0.798	14 32.5	22 53.4
8	.0245	11.79	0.8163	218 39	1.3069	342 23	.4251	2.66	0.786	14 34.6	22 49.6
9	.0272	11.63	0.8134	219 11	1.3065	341 26	.4468	2.80	0.775	14 36.8	22 45.8
10	.0299	11.46	0.8105	219 44	1.3061	340 29	.4673	2.93	0.764	14 38.9	22 41.9
11	.0327	—11.29	0.8076	220 17	1.3056	339 32	*n* 0.4868	—3.07	—0.753	14 41.2	22 38.1
12	.0354	11.13	0.8049	220 51	1.3052	338 34	.5053	3.20	0.742	14 43.4	22 34.3
13	.0382	10.96	0.8022	221 25	1.3047	337 37	.5229	3.33	0.731	14 45.7	22 30.5
14	.0409	10.80	0.7996	222 0	1.3043	336 39	.5397	3.46	0.720	14 48.0	22 26.6
15	.0436	10.64	0.7971	222 35	1.3038	335 41	.5557	3.59	0.709	14 50.3	22 22.8
16	.0464	—10.48	0.7946	223 10	1.3033	334 43	*n* 0.5711	—3.72	—0.699	14 52.7	22 18.9
17	.0491	10.32	0.7922	223 46	1.3027	333 45	.5857	3.85	0.688	14 55.1	22 15.0
h 18	.0518	10.16	0.7899	224 22	1.3022	332 47	.5998	3.98	0.678	14 57.5	22 11.2
(8.0) 19	.0546	10.01	0.7877	224 59	1.3017	331 49	.6132	4.10	0.667	14 59.9	22 7.3
20	.0573	9.85	0.7856	225 35	1.3011	330 51	.6262	4.23	0.657	15 2.4	22 3.4
21	.0601	— 9.70	0.7835	226 12	1.3005	329 52	*n* 0.6386	— 4.35	—0.646	15 4.8	21 59.5
22	.0628	9.54	0.7815	226 49	1.3000	328 53	.6506	4.47	0.636	15 7.3	21 55.6
23	.0655	9.39	0.7797	227 27	1.2993	327 54	.6620	4.59	0.626	15 9.8	21 51.6
24	.0683	9.24	0.7779	228 4	1.2987	326 56	.6731	4.71	0.616	15 12.3	21 47.7
25	.0710	9.09	0.7761	228 42	1.2981	325 56	.6837	4.83	0.606	15 14.8	21 43.8
26	.0737	— 8.95	0 7745	229 20	1.2975	324 57	*n* 0.6940	—4.94	—0.596	15 17.3	21 39.8
27	.0765	8.80	0.7730	229 58	1.2969	323 58	.7039	5.06	0.587	15 19.9	21 35.8
28	.0792	8.65	0.7715	230 36	1 2962	322 58	.7134	5.17	0.577	15 22.4	21 31.9
29	.0820	8.51	0.7701	231 14	1.2956	321 58	.7226	5.28	0.567	15 24.9	21 27.9
30	.0847	8.37	0.7689	231 52	1.2950	320 58	.7315	5.39	0.558	15 27.5	21 23.9
31	.0874	— 8.23	0.7677	232 29	1.2943	319 58	*n* 0.7400	—5.49	—0.549	15 30.0	21 19.9
Feb. 1	.0902	8.09	0.7665	233 7	1.2936	318 58	.7483	5.60	0.539	15 32.5	21 15.9
2	.0929	7.95	0.7655	233 45	1.2930	317 57	.7562	5.70	0.530	15 35.0	21 11.8
h 3	0957	7.82	0.7645	234 22	1.2923	316 57	.7639	5.81	0.521	15 37.5	21 7.8
(9.0) 4	.0984	7.68	0.7636	235 0	1.2916	315 56	.7713	5.91	0.512	15 40.0	21 3.7
5	.1011	— 7.55	0.7628	235 37	1.2910	314 55	*n* 0.7785	—6.00	—0.503	15 42.4	20 59.7
6	.1039	7.42	0.7621	236 14	1.2903	313 54	.7854	6.10	0.495	15 44.9	20 55.6
7	.1066	7.29	0.7614	236 50	1.2897	312 53	.7920	6.19	0.486	15 47.4	20 51.5
8	.1093	7.16	0.7608	237 27	1.2890	311 51	.7984	6.29	0.477	15 49.8	20 47.4
9	.1121	7.04	0.7602	238 3	1.2883	310 50	.8046	6.38	0.469	15 52.2	20 43.3
10	.1148	— 6.91	0.7598	238 39	1.2877	309 48	*n* 0.8106	—6.47	—0.461	15 54.6	20 39.2
11	.1176	6.79	0.7594	239 15	1.2870	308 46	.8163	6.55	0.452	15 57.0	20 35.1
12	.1203	6.66	0.7590	239 50	1.2864	307 44	.8219	6.64	0.444	15 59.3	20 30.9
13	.1230	6.54	0.7587	240 25	1.2857	306 42	.8272	6.72	0.436	16 1.7	20 26.8
14	.1258	6.42	0.7584	241 0	1.2851	305 40	.8324	6.80	0.428	16 4.0	20 22.6
15	.1285	— 6.30	0.7582	241 34	1.2845	304 37	*n* 0.8373	—6.87	—0.420	16 6.3	20 18.5
16	.1312	6.19	0.7580	242 8	1.2839	303 34	.8420	6.95	0.412	16 8.5	20 14.3
17	.1340	6.07	0.7579	242 42	1.2833	302 32	.8466	7.02	0.405	16 10.8	20 10.1
h 18	.1367	5.95	0.7578	243 15	1.2827	301 28	.8510	7.10	0.397	16 13.0	20 5.9
(10.0) 19	.1395	5.84	0.7577	243 48	1.2821	300 25	.8552	7.16	0.389	16 15.2	20 1.7
20	.1422	— 5.73	0.7577	244 20	1.2815	299 22	*n* 0.8592	—7.23	—0.382	16 17.4	19 57.5
21	.1449	5.62	0.7577	244 52	1.2810	298 17	.8631	7.30	0.375	16 19.5	19 53.2
22	.1477	5.51	0.7577	245 24	1.2805	297 15	.8668	7.36	0.367	16 21.6	19 49.0
23	.1504	5.40	0.7577	245 56	1.2799	296 12	.8703	7.42	0.360	16 23.7	19 44.8
24	.1531	5.29	0.7578	246 27	1.2794	295 8	.8736	7.47	0.353	16 25.8	19 40.5
25	.1559	— 5.19	0.7579	246 57	1.2789	294 4	*n* 0.8768	—7.53	—0.346	16 27.8	19 36.3
26	.1586	5.08	0.7579	247 27	1.2785	293 0	.8799	7.58	0.339	16 29.8	19 32.0
27	.1614	4.98	0.7580	247 57	1.2780	291 56	.8828	7.63	0.332	16 31.8	19 27.7
28	.1641	4.87	0.7581	248 27	1.2776	290 51	.8855	7.68	0.325	16 33.8	19 23.4
29	0.1668	— 4.77	0.7582	248 56	1.2772	289 47	*n* 0.8881	—7.73	—0.318	16 35.7	19 19.2

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1873.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
Mar. 1	0.1668	— 4.77	0.7582	248 56	1.2772	289 47	*n* 0.8881	—7.73	—0.318	16 35.7	19 19.2
2	.1696	4.66	0.7584	249 25	1.2767	288 43	.8905	7.77	0.311	16 37.7	19 14.9
3	.1723	4.57	0.7585	249 53	1.2763	287 38	.8928	7.81	0.304	16 39.6	19 10.6
4	.1751	4.47	0.7586	250 22	1.2759	286 34	.8949	7.85	0.298	16 41.4	19 6.3
5	.1778	4.37	0.7587	250 50	1.2756	285 29	.8969	7.89	0.291	16 43.3	19 2.0
h (11.0) 6	.1805	— 4.27	0.7588	251 17	1.2752	284 25	*n* 0.8988	—7.92	—0.284	16 45.1	18 57.6
7	.1833	4.17	0.7589	251 44	1.2749	283 20	.9005	7.95	0.278	16 47.0	18 53.3
8	.1860	4.07	0.7590	252 11	1.2747	282 15	.9021	7.98	0.271	16 48.8	18 49.0
9	.1887	3.97	0.7590	252 38	1.2744	281 10	.9035	8.01	0.265	16 50.5	18 44.7
10	.1915	3.88	0.7591	253 4	1.2742	280 5	.9048	8.03	0.258	16 52.3	18 40.4
11	.1942	— 3.78	0.7591	253 31	1.2740	279 0	*n* 0.9060	—8.05	—0.252	16 54.0	18 36.0
12	.1970	3.69	0.7591	253 57	1.2738	277 55	.9070	8.07	0.246	16 55.8	18 31.7
13	.1997	3.59	0.7591	254 22	1.2736	276 50	.9079	8.09	0.239	16 57.5	18 27.4
14	.2024	3.50	0.7591	254 48	1.2735	275 45	.9087	8.10	0.233	16 59.2	18 23.0
15	.2052	3.40	0.7590	255 14	1.2734	274 40	.9093	8.11	0.227	17 0.9	18 18.7
16	.2079	— 3.31	0.7589	255 39	1.2733	273 35	*n* 0.9098	—8.12	—0.220	17 2.6	18 14.4
17	.2106	3.21	0.7589	256 4	1.2732	272 30	.9102	8.13	0.214	17 4.3	18 10.0
18	.2134	3.12	0.7587	256 30	1.2732	271 25	.9104	8.14	0.208	17 6.0	18 5.7
19	.2161	3.02	0.7586	256 55	1.2731	270 21	.9105	8.14	0.202	17 7.6	18 1.4
20	.2189	2.93	0.7584	257 19	1.2731	269 17	.9105	8.14	0.195	17 9.3	17 57.1
h (12.0) 21	.2216	— 2.83	0.7582	257 44	1.2732	268 11	*n* 0.9103	—8.13	—0.189	17 11.0	17 52.7
22	.2243	2.74	0.7580	258 9	1.2732	267 6	.9101	8.13	0.183	17 12.6	17 48.4
23	.2271	2.65	0.7577	258 34	1.2733	266 1	.9096	8.12	0.176	17 14.2	17 44.1
24	.2298	2.55	0.7575	258 58	1.2734	264 57	.9091	8.11	0.170	17 15.9	17 39.8
25	.2325	2.46	0.7571	259 23	1.2735	263 52	.9084	8.10	0.164	17 17.5	17 35.5
26	.2353	— 2.36	0.7568	259 48	1.2737	262 48	*n* 0.9076	—8.08	—0.157	17 19.2	17 31.2
27	.2380	2.27	0.7564	260 13	1.2738	261 43	.9067	8.07	0.151	17 20.9	17 26.9
28	.2408	2.17	0.7561	260 38	1.2740	260 39	.9056	8.05	0.145	17 22.5	17 22.6
29	.2435	2.07	0.7556	261 3	1.2742	259 34	.9044	8.02	0.138	17 24.2	17 18.3
30	.2462	1.98	0.7552	261 28	1.2745	258 30	.9031	8.00	0.132	17 25.9	17 14.0
31	.2490	— 1.88	0.7547	261 54	1.2748	257 26	*n* 0.9016	—7.97	—0.125	17 27.6	17 9.8
Apr. 1	.2517	1.78	0.7542	262 19	1.2750	256 22	.8998	7.94	0.119	17 29.3	17 5.5
2	.2545	1.68	0.7537	262 45	1.2753	255 18	.8983	7.91	0.112	17 31.0	17 1.2
3	.2572	1.59	0.7532	263 10	1.2757	254 15	.8964	7.88	0.106	17 32.7	16 57.0
4	.2599	1.49	0.7526	263 36	1.2760	253 11	.8944	7.84	0.099	17 34.4	16 52.8
h (13.0) 5	.2627	— 1.39	0.7520	264 3	1.2764	252 8	*n* 0.8923	—7.80	—0.092	17 36.2	16 48.5
6	.2654	1.28	0.7514	264 29	1.2768	251 5	.8900	7.76	0.086	17 37.9	16 44.3
7	.2681	1.18	0.7508	264 56	1.2772	250 2	.8876	7.72	0.079	17 39.7	16 40.1
8	.2709	1.08	0.7502	265 23	1.2776	248 59	.8851	7.67	0.072	17 41.5	16 35.9
9	.2736	0.98	0.7495	265 50	1.2780	247 56	.8824	7.63	0.065	17 43.3	16 31.7
10	.2764	— 0.87	0.7488	266 18	1.2785	246 53	*n* 0.8795	—7.58	—0.058	17 45.2	16 27.6
11	.2791	0.77	0.7482	266 45	1.2790	245 51	.8766	7.53	0.051	17 47.0	16 23.4
12	.2818	0.66	0.7475	267 13	1.2794	244 49	.8734	7.47	0.044	17 48.9	16 19.2
13	.2846	0.55	0.7468	267 42	1.2799	243 46	.8702	7.42	0.037	17 50.8	16 15.1
14	.2873	0.45	0 7461	268 11	1.2805	242 44	.8667	7.36	0.030	17 52.7	16 11.0
15	.2900	— 0.34	0.7454	268 40	1.2810	241 43	*n* 0.8632	—7.30	—0.023	17 54.6	16 6.9
16	.2928	0.23	0.7447	269 9	1.2815	240 41	.8594	7.23	0.015	17 56.6	16 2.8
17	.2955	— 0.12	0.7440	269 39	1.2821	239 40	.8555	7.17	—0.008	17 58.6	15 58.7
18	.2983	0.00	0.7433	270 10	1.2826	238 39	.8515	7.10	0.000	18 0.6	15 54.6
19	.3010	+ 0.11	0.7426	270 40	1.2832	237 38	.8473	7.03	+0.007	18 2.7	15 50.5
h 20	.3037	+ 0.22	0.7419	271 12	1.2838	236 37	*n* 0.8429	—6.96	+0.015	18 4.8	15 46.5
(14.0) 21	.3065	0.34	0.7412	271 43	1.2844	235 36	.8383	6.89	0.023	18 6.9	15 42.4
22	.3092	0.46	0.7406	272 15	1.2850	234 36	.8336	6.82	0.030	18 9.0	15 38.4
23	.3119	0.57	0.7399	272 47	1.2856	233 36	.8287	6.74	0.038	18 11.2	15 34.4
24	.3147	0.69	0.7393	273 20	1.2862	232 36	.8236	6.66	0.046	18 13.4	15 30.4
25	.3174	+ 0.81	0.7387	273 54	1.2868	231 36	*n* 0.8184	—6.58	+0.054	18 15.6	15 26.4
26	.3202	0.94	0.7382	274 27	1.2874	230 36	.8129	6.50	0.062	18 17.8	15 22.4
27	.3229	1.06	0.7377	275 2	1.2881	229 37	.8072	6.41	0.071	18 20.1	15 18.5
28	.3256	1.18	0.7372	275 36	1.2887	228 38	.8014	6.33	0.079	18 22.4	15 14.5
29	.3284	1.31	0.7367	276 11	1.2893	227 39	.7954	6.24	0.087	18 24.8	15 10.6
30	.3311	+ 1.44	0.7363	276 47	1.2899	226 40	*n* 0.7891	—6.15	+0.096	18 27.0	15 6.7
31	0.3339	+ 1.57	0.7360	277 23	1.2906	225 42	*n* 0.7827	—6.06	+0.104	18 29.5	15 2.8

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1873.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	f.	Log g.	G.	Log h.	H.	Log i.	i.	f.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
May 1	0.3339	+ 1.57	0.7360	277 23	1.2906	225 42	n 0.7827	−6.06	+0.104	18 29.5	15 2.8
2	.3366	1.70	0.7356	277 59	1.2912	224 43	.7760	5.97	0.113	18 31.9	14 58.9
3	.3393	1.83	0.7354	278 36	1.2918	223 45	.7691	5.88	0.122	18 34.4	14 55.0
4	.3421	1.96	0.7352	279 13	1.2925	222 47	.7619	5.78	0.131	18 36.9	14 51.1
5	.3448	2.09	0.7350	279 50	1.2931	221 49	.7545	5.68	0.140	18 39.4	14 47.3
h (15.0) 6	.3475	+ 2.23	0.7349	280 28	1.2937	220 52	n 0.7469	−5.58	+0.149	18 41.9	14 43.4
7	.3503	2.36	0.7349	281 7	1.2944	219 54	.7390	5.48	0.158	18 44.4	14 39.6
8	.3530	2.50	0.7349	281 45	1.2950	218 57	.7308	5.38	0.167	18 47.0	14 35.8
9	.3558	2.64	0.7350	282 24	1.2956	218 0	.7223	5.28	0.176	18 49.6	14 32.0
10	.3585	2.78	0.7352	283 3	1.2962	217 3	.7136	5.17	0.185	18 52.2	14 28.2
11	.3612	+ 2.92	0.7355	283 43	1.2968	216 6	n 0.7046	−5.06	+0.195	18 54.8	14 24.4
12	.3640	3.06	0.7358	284 22	1.2974	215 10	.6951	4.96	0.204	18 57.5	14 20.7
13	.3667	3.21	0.7362	285 2	1.2980	214 14	.6855	4.85	0.214	19 0.2	14 16.9
14	.3694	3.35	0.7367	285 42	1.2986	213 18	.6755	4.74	0.224	19 2.8	14 13.2
15	.3722	3.50	0.7373	286 23	1.2992	212 22	.6651	4.62	0.233	19 5.5	14 9.4
16	.3749	+ 3.65	0.7380	287 3	1.2997	211 26	n 0.6544	−4.51	+0.243	19 8.2	14 5.7
17	.3777	3.80	0.7388	287 44	1.3003	210 30	.6432	4.40	0.253	19 10.9	14 2.0
18	.3804	3.95	0.7396	288 25	1.3009	209 35	.6317	4.28	0.263	19 13.7	13 58.3
19	.3831	4.10	0.7406	289 6	1.3014	208 40	.6197	4.17	0.273	19 16.4	13 54.6
20	.3859	4.25	0.7416	289 47	1.3019	207 44	.6072	4.05	0.283	19 19.1	13 51.0
h (16.0) 21	.3886	+ 4.40	0.7428	290 28	1.3024	206 49	n 0.5943	−3.93	+0.294	19 21.8	13 47.3
22	.3913	4.56	0.7440	291 9	1.3029	205 55	.5808	3.81	0.304	19 24.6	13 43.6
23	.3941	4.71	0.7453	291 50	1.3034	205 0	.5668	3.69	0.314	19 27.3	13 40.0
24	.3968	4.87	0.7468	292 30	1.3039	204 5	.5521	3.56	0.325	19 30.0	13 36.4
25	.3996	5.03	0.7483	293 11	1.3043	203 11	.5369	3.44	0.335	19 32.7	13 32.7
26	.4023	+ 5.18	0.7499	293 51	1.3048	202 17	n 0.5210	−3.32	+0.346	19 35.4	13 29.1
27	.4050	5.34	0.7516	294 31	1.3052	201 23	.5043	3.19	0.356	19 38.1	13 25.5
28	.4078	5.51	0.7534	295 12	1.3056	200 29	.4869	3.07	0.367	19 40.8	13 21.9
29	.4105	5.67	0.7553	295 51	1.3060	199 35	.4686	2.94	0.378	19 43.4	13 18.3
30	.4133	5 83	0.7573	296 31	1.3064	198 41	.4494	2.81	0.389	19 46.1	13 14.7
31	.4160	+ 5.99	0.7594	297 11	1.3068	197 47	n 0.4292	−2.69	+0.400	19 48.7	13 11.2
June 1	.4187	6.16	0 7616	297 50	1.3071	196 54	.4078	2.56	0.410	19 51.3	13 7.6
2	.4215	6.32	0.7639	298 28	1.3975	196 0	.3853	2.43	0 421	19 53.9	13 4.0
3	.4242	6.49	0.7662	299 6	1.3078	195 7	.3614	2.30	0.432	19 56.4	13 0.5
4	.4269	6.65	0.7686	299 44	1.3082	194 14	.3360	2.17	0.444	19 58.9	12 56.9
h (17.0) 5	.4297	+ 6.82	0.7712	300 21	1.3084	193 20	n 0.3087	−2.04	+ 0.455	20 1.4	12 53.4
6	.4324	6.99	0.7737	300 58	1.3087	192 27	.2797	1.90	0.466	20 3.9	12 49.8
7	.4352	7.15	0.7764	301 35	1.3089	191 34	.2484	1.77	0.477	20 6.3	12 46.3
8	.4379	7.32	0.7792	302 11	1.3092	190 41	.2146	1.64	0.488	20 8.7	12 42.7
9	.4406	7.49	0.7820	302 46	1.3094	189 48	.1778	1.51	0.499	20 11.1	12 39.2
10	.4434	+ 7.66	0.7849	303 21	1.3096	188 55	n 0.1375	−1.37	+0.511	20 13.4	12 35.7
11	.4461	7.83	0.7878	303 55	1.3098	188 3	0.0929	1.24	0.522	20 15.7	12 32.2
12	.4488	8.00	0.7909	304 29	1.3099	187 10	0.0430	1.10	0.533	20 17.9	12 28.7
13	.4516	8.17	0.7939	305 2	1.3101	186 17	9.9866	0.97	0.545	20 20.1	12 25.2
14	.4543	8.34	0.7971	305 34	1.3102	185 25	9.9216	0.83	0.556	20 22.3	12 21.6
15	.4571	+ 8.51	0.8003	306 6	1.3103	184 32	n 9.8451	−0.70	+0.568	20 24.4	12 18.1
16	.4598	8.68	0.8035	306 38	1.3104	183 39	9.7520	0.56	0.579	20 26.5	12 14.6
17	.4625	8.85	0.8068	307 8	1.3105	182 47	9.6330	0.43	0.590	20 28.6	12 11.1
18	.4653	9.03	0.8101	307 38	1.3105	181 54	9.4688	0.29	0.602	20 30.6	12 7.6
19	.4680	9.20	0.8134	308 8	1.3106	181 2	9.2007	0.16	0.613	20 32.5	12 4.1
h 20	.4707	+ 9.37	0.8168	308 37	1.3106	180 9	n 8.3611	−0.02	+0.625	20 34.5	12 0.6
(18.0) 21	.4735	9.54	0.8202	309 5	1.3106	179 17	p 9.0489	+0.11	0.636	20 36.3	11 57.1
22	.4762	9.71	0.8237	309 32	1.3106	178 24	9.3935	0.25	0.648	20 38.2	11 53.6
23	.4790	9.89	0.8272	309 59	1.3105	177 32	9.5829	0.38	0.659	20 39.9	11 50.1
24	.4817	10.06	0.8307	310 25	1.3105	176 39	9.7144	0.52	0.671	20 41.7	11 46.6
25	.4844	+10.23	0.8343	310 51	1.3104	175 47	9.8150	+0.65	+0.682	20 43.4	11 43.1
26	.4872	10.40	0.8378	311 16	1.3103	174 54	9.8965	0.79	0.693	20 45.1	11 39.6
27	.4899	10.57	0.8414	311 40	1.3101	174 2	9.9650	0.92	0.705	20 46.7	11 36.1
28	.4926	10.74	0.8450	312 4	1.3100	173 9	0.0241	1.06	0.716	20 48.3	11 32.6
29	.4954	10.91	0.8486	312 27	1.3098	172 16	0.0760	1.19	0.727	20 49.8	11 29.1
30	.4981	+11.08	0.8522	312 49	1.3097	171 24	0.1222	+1.32	+0.739	20 51.3	11 25.6
31	0.5009	+11.25	0.8559	313 11	1.3095	170 31	0.1638	+1.46	+0·750	20 52.8	11 22.1

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1873.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	f.	Log g.	G.	Log h.	H.	Log i.	i.	f.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
July 1	0.5009	+11.25	0.8559	313 11	1.3095	170 31	0.1638	+1.46	+0.750	20 52.8	11 22.1
2	.5036	11.42	0.8595	313 32	1.3093	169 38	.2019	1.59	0.761	20 54.2	11 18.6
3	.5063	11.59	0.8631	313 53	1.3090	168 45	.2366	1.72	0.773	20 55.5	11 15.0
4	.5091	11.76	0.8667	314 13	1.3088	167 53	.2687	1.86	0.784	20 56.9	11 11.5
5	.5118	11.92	0.8704	314 32	1.3085	167 0	.2984	1.99	0.795	20 58.2	11 8.0
^{h}(19.0) 6	.5146	+12.09	0.8740	314 51	1.3082	166 7	0.3261	+2.12	+0.806	20 59.4	11 4.4
7	.5173	12.26	0.8776	315 9	1.3079	165 13	.3521	2.25	0.817	21 0.6	11 0.9
8	.5200	12.42	0.8812	315 27	1.3076	164 20	.3764	2.38	0.828	21 1.8	10 57.4
9	.5228	12.59	0.8848	315 44	1.3073	163 27	.3994	2.51	0.839	21 2.9	10 53.8
10	.5255	12.75	0.8884	316 1	1.3070	162 34	.4211	2.64	0.850	21 4.1	10 50.2
11	.5282	+12.92	0.8919	316 17	1.3066	161 40	0.4416	+2.76	+0.861	21 5.1	10 46.7
12	.5310	13.08	0.8955	316 33	1.3062	160 47	.4612	2.89	0.872	21 6.2	10 43.1
13	.5337	13.24	0.8990	316 48	1.3058	159 53	.4797	3.02	0.883	21 7.2	10 39.5
14	.5365	13.40	0.9025	317 2	1.3054	158 59	.4974	3.14	0.894	21 8.2	10 35.9
15	.5392	13.56	0.9060	317 16	1.3050	158 5	.5143	3.27	0.904	21 9.1	10 32.4
16	.5419	+13.72	0.9094	317 30	1.3045	157 11	0.5304	+3.39	+0.915	21 10.0	10 28.8
17	.5447	13.88	0.9129	317 43	1.3041	156 17	.5458	3.51	0.925	21 10.9	10 25.2
18	.5474	14.04	0.9163	317 56	1.3036	155 23	.5606	3.64	0.936	21 11.7	10 21.5
19	.5501	14.19	0.9197	318 8	1.3032	154 28	.5748	3.76	0.946	21 12.5	10 17.9
20	.5529	14.35	0.9230	318 20	1.3027	153 34	.5885	3.88	0.957	21 13.3	10 14.2
^{h}(20.0) 21	.5556	+14.50	0.9264	318 32	1.3021	152 39	0.6016	+4.00	+0.967	21 14.1	10 10.6
22	.5584	14.65	0.9297	318 43	1.3016	151 45	.6142	4.11	0.977	21 14.8	10 7.0
23	.5611	14.81	0.9330	318 53	1.3011	150 50	.6263	4.23	0.987	21 15.6	10 3.3
24	.5638	14.96	0.9362	319 4	1.3006	149 55	.6380	4.34	0.997	21 16.3	9 59.7
25	.5666	15.11	0.9394	319 14	1.3000	149 0	.6492	4.46	1.007	21 16.9	9 56.0
26	.5693	+15.25	0.9426	319 23	1.2995	148 4	0.6601	+4.57	+1.017	21 17.6	9 52.3
27	.5720	15.40	0.9458	319 33	1.2989	147 9	.6706	4.68	1.027	21 18.2	9 48.6
28	.5748	15.55	0.9489	319 42	1.2983	146 14	.6807	4.79	1.037	21 18.8	9 44.9
29	.5775	15.69	0.9520	319 50	1.2977	145 18	.6905	4.90	1.046	21 19.4	9 41.2
30	.5803	15.84	0.9551	319 59	1.2971	144 22	.6999	5.01	1.056	21 19.9	9 37.5
31	.5830	+15.98	0.9581	320 7	1.2965	143 26	0.7091	+5.12	+1.065	21 20.5	9 33.7
Aug. 1	.5857	16.12	0.9611	320 15	1.2959	142 29	.7179	5.22	1.075	21 21.0	9 30.0
2	.5885	16.26	0.9641	320 22	1.2953	141 33	.7264	5.33	1.084	21 21.5	9 26.2
3	.5912	16.40	0.9670	320 29	1.2947	140 36	.7346	5.43	1.093	21 22.0	9 22.4
4	.5940	16.54	0.9699	320 36	1.2941	139 39	.7426	5.53	1.102	21 22.4	9 18.6
^{h}(21.0) 5	.5967	+16.67	0.9727	320 43	1.2935	138 42	0.7503	+5.63	+1.112	21 22.9	9 14.8
6	.5994	16.81	0.9755	320 50	1.2929	137 45	.7578	5.72	1.121	21 23.3	9 11.0
7	.6022	16.94	0.9783	320 56	1.2922	136 48	.7650	5.82	1.129	21 23.7	9 7.2
8	.6049	17.07	0.9810	321 2	1.2916	135 50	.7720	5.92	1.138	21 24.2	9 3.4
9	.6076	17.21	0.9837	321 8	1.2910	134 53	.7788	6.01	1.147	21 24.6	8 59.5
10	.6104	+17.34	0.9864	321 14	1.2904	133 55	0.7853	+6.10	+1.156	21 24.9	8 55.6
11	.6131	17.46	0.9891	321 20	1.2897	132 56	.7916	6.19	1.164	21 25.3	8 51.8
12	.6159	17.59	0.9917	321 25	1.2891	131 58	.7978	6.28	1.173	21 25.7	8 47.9
13	.6186	17.72	0.9942	321 30	1.2885	131 0	.8037	6.36	1.181	21 26.0	8 44.0
14	.6213	17.84	0.9967	321 36	1.2878	130 1	.8094	6.45	1.189	21 26.4	8 40.1
15	.6241	+17.96	0.9992	321 41	1.2872	129 2	0.8149	+6.53	+1.198	21 26.7	8 36.1
16	.6268	18.09	1.0017	321 46	1.2866	128 3	.8202	6.61	1.206	21 27.0	8 32.2
17	.6295	18.21	1.0041	321 50	1.2860	127 4	.8254	6.69	1.214	21 27.4	8 28.3
18	.6323	18.33	1.0065	321 55	1.2854	126 5	.8303	6.77	1.222	21 27.7	8 24.3
19	.6350	18.45	1.0088	322 0	1.2848	125 5	.8351	6.84	1.230	21 28.0	8 20.4
^{h}(22.0) 20	.6378	+18.56	1.0111	322 4	1.2842	124 5	0.8397	+6.91	+1.238	21 28.3	8 16.4
21	.6405	18.68	1.0134	322 8	1.2836	123 5	.8442	6.98	1.245	21 28.6	8 12.4
22	.6432	18.80	1.0156	322 13	1.2831	122 5	.8485	7.05	1.253	21 28.9	8 8.3
23	.6460	18.91	1.0178	322 17	1.2825	121 5	.8526	7.12	1.261	21 29.2	8 4.3
24	.6487	19.02	1.0200	322 22	1.2819	120 4	.8566	7.19	1.268	21 29.4	8 0.3
25	.6514	+19.14	1.0222	322 26	1.2814	119 3	0.8604	+7.25	+1.276	21 29.7	7 56.2
26	.6542	19.25	1.0243	322 30	1.2809	118 2	.8640	7.31	1.283	21 30.0	7 52.2
27	.6569	19.36	1.0263	322 34	1.2803	117 1	.8675	7.37	1.291	21 30.3	7 48.1
28	.6597	19.47	1.0284	322 38	1.2798	116 0	.8709	7.43	1.298	21 30.6	7 44.0
29	.6624	19.57	1.0304	322 42	1.2793	114 59	.8741	7.48	1.305	21 30.8	7 39.9
30	.6651	+19.68	1.0323	322 46	1.2788	113 57	0.8772	+7.54	+1.312	21 31.1	7 35.8
31	0.6679	+19.79	1.0343	322 50	1.2784	112 55	0.8801	+7.59	+1.319	21 31.4	7 31.7

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1873.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
Sept. 1	0.6706	+19.89	1.0362	322 55	1.2780	111 53	0.8829	+7.64	+1.326	21 31.6	7 27.6
2	.6734	20.00	1.0381	322 59	1.2775	110 51	.8855	7.68	1.333	21 31.9	7 23.4
3	.6771	20.10	1.0399	323 3	1.2771	109 49	.8880	7.73	1.340	21 32.2	7 19.3
h 4	.6788	20.20	1.0417	323 7	1.2767	108 47	.8904	7.77	1.347	21 32.5	7 15.1
(23.0) 5	.6816	20.30	1.0435	323 11	1.2763	107 44	.8926	7.81	1.354	21 32.8	7 10.9
6	.6843	+20.41	1.0453	323 16	1.2760	106 41	0.8947	+7.85	+1.360	21 33.1	7 6.8
7	.6870	20.51	1.0470	323 20	1.2756	105 39	.8966	7.88	1.367	21 33.3	7 2.6
8	.6898	20.61	1.0487	323 24	1.2753	104 36	.8985	7.92	1.374	21 33.6	6 58.4
9	.6925	20.71	1.0504	323 29	1.2750	103 33	.9002	7.95	1.381	21 33.9	6 54.2
10	.6953	20.81	1.0520	323 33	1.2747	102 30	.9017	7.97	1.387	21 34.2	6 50.0
11	.6980	+20.91	1.0537	323 38	1.2745	101 26	0.9032	+8.00	+1.394	21 34.5	6 45.8
12	.7007	21.00	1.0553	323 43	1.2742	100 23	.9045	8.03	1.400	21 34.8	6 41.5
13	.7035	21.10	1.0568	323 47	1.2740	99 20	.9057	8.05	1.407	21 35.2	6 37.3
14	.7062	21.20	1.0584	323 52	1.2738	98 16	.9067	8.07	1.413	21 35.5	6 33.1
15	.7089	21.29	1.0599	323 57	1.2736	97 12	.9076	8.08	1.420	21 35.8	6 28.8
16	.7117	+21.39	1.0614	324 2	1.2735	96 9	0.9084	+8.10	+1.426	21 36.1	6 24.6
17	.7144	21.49	1.0629	324 7	1.2734	95 5	.9091	8.11	1.433	21 36.5	6 20.3
18	.7173	21.58	1.0644	324 12	1.2733	94 1	.9096	8.12	1.439	21 36.8	6 16.1
h 19	.7199	21.68	1.0658	324 18	1.2732	92 57	.9100	8.13	1.445	21 37.2	6 11.8
(0.0) 20	.7226	21.78	1.0673	324 23	1.2732	91 53	.9103	8.13	1.452	21 37.5	6 7.5
21	.7254	+21.87	1.0687	324 28	1.2731	90 49	0.9105	+8.14	+1.458	21 37.9	6 3.3
22	.7281	21.97	1.0701	324 34	1.2731	89 45	.9105	8.14	1.465	21 38.3	5 59.0
23	.7308	22.07	1.0715	324 40	1.2731	88 41	.9104	8.14	1.471	21 38.7	5 54.7
24	.7336	22.16	1.0728	324 46	1.2732	87 37	.9102	8.13	1.478	21 39.1	5 50.4
25	.7363	22.26	1.0742	324 52	1.2732	86 32	.9099	8.13	1.484	21 39.5	5 46.2
26	.7391	+22.35	1.0755	324 58	1.2733	85 29	0.9094	+8.12	+1.490	21 39.9	5 41.9
27	.7418	22.45	1.0768	325 4	1.2734	84 24	.9088	8.11	1.497	21 40.3	5 37.6
28	.7445	22.55	1.0781	325 11	1.2736	83 20	.9080	8.09	1.503	21 40.7	5 33.3
29	.7473	22.64	1.0794	325 17	1.2737	82 16	.9072	8.08	1.510	21 41.2	5 29.0
30	.7500	22.74	1.0807	325 24	1.2739	81 11	.9062	8.06	1.516	21 41.6	5 24.8
Oct. 1	.7528	+23.84	1.0819	325 31	1.2741	80 7	0.9050	+8.03	+1.523	21 42.1	5 20.5
2	.7555	22.94	1.0832	325 38	1.2743	79 3	.9038	8.01	1.529	21 42.5	5 16.2
3	.7582	23.04	1.0845	325 45	1.2746	77 59	.9024	7.99	1.536	21 43.0	5 11.9
h 4	.7610	23.14	1.0857	325 52	1.2749	76 55	.9009	7.96	1.543	21 43.5	5 7.7
(1.0) 5	.7637	23.24	1.0869	325 59	1.2752	75 51	.8992	7.93	1.549	21 44.0	5 3.4
6	.7664	+23.34	1.0882	326 7	1.2755	74 47	0.8974	+7.90	+1.556	21 44.5	4 59.1
7	.7692	23.44	1.0894	326 15	1.2758	73 43	.8955	7.86	1.563	21 45.0	4 54.9
8	.7719	23.54	1.0906	326 22	1.2762	72 39	.8934	7.82	1.569	21 45.5	4 50.6
9	.7747	23.64	1.0919	326 30	1.2766	71 36	.8912	7.78	1.576	21 46.0	4 46.4
10	.7774	23.75	1.0931	326 38	1.2770	70 32	.8888	7.74	1.583	21 46.6	4 42.1
11	.7801	+23.85	1.0943	326 47	1.2774	69 28	0.8863	+7.70	+1.590	21 47.1	4 37.9
12	.7829	23.96	1.0955	326 55	1.2778	68 25	.8837	7.65	1.597	21 47.7	4 33.7
13	.7856	24.07	1.0968	327 3	1.2782	67 21	.8809	7.60	1.694	21 48.2	4 29.4
14	.7883	24.17	1.0980	327 12	1.2787	66 18	.8779	7.55	1.611	21 48.8	4 25.2
15	.7911	24.28	1.0992	327 21	1.2792	65 15	.8748	7.49	1.619	21 49.4	4 21.0
16	.7938	+24.39	1.1005	327 30	1.2797	64 12	0.8715	+7.44	+1.626	21 50.0	4 16.8
17	.7966	24.50	1.1017	327 39	1.2803	63 9	.8681	7.38	1.633	21 50.6	4 12.6
18	.7993	24.61	1.1030	327 48	1.2808	62 6	.8645	7.32	1.641	21 51.2	4 8.4
h 19	.8020	24.72	1.1042	327 57	1.2813	61 3	.8608	7.26	1.648	21 51.8	4 4.2
(2.0) 20	.8048	24.84	1.1055	328 6	1.2819	69 1	.8569	7.19	1.656	21 52.4	4 0.0
21	.8075	+24.95	1.1067	328 16	1.2824	58 58	0.8528	+7.12	+1.664	21 53.1	3 55.9
22	.8102	25.07	1.1080	328 25	1.2830	57 56	.8486	7.06	1.671	21 53.7	3 51.7
23	.8130	25.19	1.1093	328 35	1.2836	56 54	.8441	6.98	1.679	21 54.3	3 47.6
24	.8157	25.31	1.1106	328 45	1.2842	55 51	.8395	6.91	1.687	21 55.0	3 43.4
25	.8185	25.43	1.1119	328 55	1.2848	54 49	.8347	6.83	1.695	21 55.6	3 39.3
26	.8212	+25.55	1.1132	329 4	1.2855	53 48	0.8297	+6.76	+1.703	21 56.3	3 35.2
27	.8239	25.67	1.1145	329 14	1.2861	52 46	.8245	6.68	1.711	21 57.0	3 31.1
28	.8267	25.80	1.1159	329 25	1.2867	51 44	.8191	6.59	1.720	21 57.6	3 27.0
29	.8294	25.92	1.1172	329 35	1.2873	50 43	.8135	6.51	1.728	21 58.3	3 22.9
30	.8322	26.05	1.1186	329 45	1.2880	49 42	.8077	6.42	1.737	21 59.0	3 18.8
31	.8349	+26.18	1.1200	329 55	1.2886	48 41	0.8017	+6.33	+1.745	21 59.7	3 14.7
32	0.8376	+26.30	1.1214	330 5	1.2893	47 40	0.7955	+6.24	+1.754	22 0.4	3 10.7

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1873.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
	s	″		° ′		° ′		″	s	h m	h m
Nov. 1	0.8376	+26.30	1.1214	330 5	1.2893	47 40	0.7955	+6.24	+1.754	22 0.4	3 10.7
2	.8404	26.44	1.1228	330 16	1.2900	46 39	.7890	6.15	1.762	22 1.1	3 6.6
h 3	.8431	26.57	1.1242	330 26	1.2906	45 39	.7823	6.06	1.771	22 1.8	3 2.6
(3.0) 4	.8458	26.70	1.1256	330 37	1.2913	44 38	.7754	5.96	1.780	22 2.5	2 58.5
5	.8486	26.84	1.1271	330 47	1.2919	43 38	.7682	5.86	1.789	22 3.2	2 54.5
6	.8513	+26.97	1.1285	330 58	1.2926	42 38	0.7607	+5.76	+1.798	22 3.9	2 50.5
7	.8541	27.11	1.1300	331 8	1.2933	41 38	.7530	5.66	1.808	22 4.5	2 46.5
8	.8568	27.25	1.1315	331 19	1.2939	40 38	.7450	5.56	1.817	22 5.2	2 42.5
9	.8595	27.40	1.1331	331 29	1.2945	39 38	.7367	5.45	1.826	22 5.9	2 38.6
10	.8623	27.54	1.1346	331 40	1.2952	38 39	.7281	5.35	1.836	22 6.6	2 34.6
11	.8650	+27.68	1.1362	331 50	1.2958	37 39	0.7192	+5.24	+1.846	22 7.3	2 30.6
12	.8677	27.83	1.1377	332 0	1.2965	36 40	.7099	5.13	1.855	22 8.0	2 26.7
13	.8705	27.98	1.1393	332 11	1.2971	35 41	.7003	5.02	1.865	22 8.7	2 22.7
14	.8732	28.12	1.1410	332 21	1.2977	34 42	.6904	4.90	1.875	22 9.4	2 18.8
15	.8760	28.27	1.1426	332 31	1.2983	33 43	.6801	4.79	1.885	22 10.1	2 14.9
16	.8787	+28.43	1.1442	332 42	1.2989	32 44	0.6694	+4.68	+1.895	22 10.8	2 11.0
17	.8814	28.58	1.1459	332 52	1.2995	31 46	.6582	4.55	1.905	22 11.5	2 7.1
18	.8842	28.73	1.1476	333 2	1.3001	30 47	.6467	4.43	1.916	22 12.1	2 3.2
h 19	.8869	28.89	1.1493	333 12	1.3007	29 49	.6347	4.31	1.926	22 12.8	1 59.3
(4.0) 20	.8896	29.05	1.1510	333 22	1.3013	28 51	.6221	4.19	1.936	22 13.5	1 55.4
21	.8924	+29.21	1.1527	333 32	1.3018	27 53	0.6091	+ 4.07	+1.947	22 14.1	1 51.5
22	.8951	29.37	1.1545	333 42	1.3024	26 55	.5955	3.94	1.958	22 14.8	1 47.7
23	.8979	29.53	1.1562	333 52	1.3029	25 57	.5814	3.81	1.968	22 15.4	1 43.8
24	.9006	29.69	1.1580	334 1	1.3034	25 0	.5666	3.69	1.979	22 16.1	1 40.0
25	.9033	29.85	1.1598	334 11	1.3039	24 2	.5512	3.56	1.990	22 16.7	1 36.1
26	.9061	+30.02	1.1616	334 20	1.3044	23 5	0.5350	+3.43	+2.001	22 17.3	1 32.3
27	.9088	30.18	1.1634	334 29	1.3049	22 7	.5181	3.30	2.012	22 18.0	1 28.5
28	.9115	30.35	1.1653	334 39	1.3053	21 10	.5003	3.16	2.023	22 18.6	1 24.7
29	.9143	30.52	1.1671	334 48	1.3058	20 13	.4816	3.03	2.035	22 19.2	1 20.9
30	.9170	30.69	1.1690	334 57	1.3062	19 16	.4619	2.90	2.046	22 19.8	1 17.1
Dec. 1	.9198	+30.86	1.1709	335 5	1.3066	18 19	0.4413	+2.76	+2.057	22 20.4	1 13.3
2	.9225	31.03	1.1728	335 14	1.3070	17 22	.4193	2.63	2.069	22 20.9	1 9.5
3	.9252	31.20	1.1747	335 22	1.3073	16 25	.3961	2.49	2.080	22 21.5	1 5.7
h 4	.9280	31.37	1.1766	335 30	1.3077	15 29	.3714	2.35	2.092	22 22.0	1 1.9
(5.0) 5	.9307	31.55	1.1786	335 39	1.3080	14 32	.3450	2.21	2.103	22 22.6	0 58.1
6	.9335	+31.72	1.1805	335 47	1.3084	13 36	0.3168	+2.07	+2.115	22 23.1	0 54.4
7	.9362	31.90	1.1824	335 54	1.3086	12 39	.2865	1.93	2.126	22 23.6	0 50.6
8	.9389	32.07	1.1844	336 2	1.3089	11 43	.2536	1.79	2.138	22 24.1	0 46.8
9	.9417	32.25	1.1863	336 10	1.3092	10 46	.2180	1.65	2.150	22 24.6	0 43.1
10	.9444	32.43	1.1883	336 17	1.3094	9 50	.1791	1.51	2.162	22 25.1	0 39.3
11	.9471	+32.60	1.1903	336 24	1.3096	8 54	0.1364	+1.37	+2.174	22 25.6	0 35.6
12	.9499	32.79	1.1923	336 31	1.3098	7 57	0.0886	1.23	2.186	22 26.1	0 31.8
13	.9526	32.96	1.1943	336 38	1.3100	7 1	0.0348	1.08	2.198	22 26.5	0 28.1
14	.9554	33.14	1.1963	336 44	1.3101	6 5	9.9731	0.94	2.209	22 27.0	0 24.3
15	.9581	33.32	1.1983	336 51	1.3103	5 9	9.9010	0.80	2.221	22 27.4	0 20.6
16	.9608	+33.50	1.2002	336 57	1.3104	4 13	9.8143	+0.65	+2.233	22 27.8	0 16.9
17	.9636	33.68	1.2022	337 3	1.3105	3 17	9.7057	0.51	2.245	22 28.2	0 13.1
18	.9663	33.86	1.2042	337 9	1.3105	2 21	9.5604	0.36	2.257	22 28.6	0 9.4
h 19	.9690	34.04	1.2063	337 15	1.3106	1 25	9.3399	0.22	2.270	22 29.0	0 5.6
(6.0) 20	.9718	34.22	1.2083	337 20	1.3106	0 29	*p* 8.8724	+0.07	2.282	22 29.3	0 1.9
21	.9745	+34.40	1.2103	337 25	1.3106	359 33	*n* 8.8534	−0.07	+2.294	22 29.7	23 58.2
22	.9773	34.58	1.2123	337 31	1.3106	358 36	9.3327	0.22	2.306	22 30.0	23 54.4
23	.9800	34.76	1.2143	337 35	1.3105	357 40	9.5560	0.36	2.318	22 30.4	23 50.7
24	.9827	34.94	1.2163	337 40	1.3104	356 44	9.7028	0.50	2.330	22 30.7	23 47.0
25	.9855	35.12	1.2183	337 45	1.3104	355 48	9.8121	0.65	2.342	22 31.0	23 43.2
26	.9882	+35.31	1.2202	337 49	1.3103	354 52	*n* 9.8993	−0.79	+2.354	22 31.3	23 39.5
27	.9909	35.49	1.2222	337 54	1.3101	353 56	9.9717	0.94	2.366	22 31.6	23 35.7
28	.9935	35.66	1.2242	337 58	1.3100	353 0	0.0337	1.08	2.378	22 31.8	23 32.0
29	.9964	35.84	1.2262	338 2	1.3098	352 3	0.0888	1.23	2.390	22 32.1	23 28.2
30	0.9992	36.02	1.2282	338 5	1.3096	351 7	0.1358	1.37	2.401	22 32.4	23 24.5
31	1.0019	+36.20	1.2301	338 9	1.3094	350 10	*n* 0.1788	−1.51	+2.413	22 32.6	23 20.7
32	1.0046	+36.38	1.2321	338 12	1.3092	349 14	*n* 0.2179	−1.65	+2.425	22 32.8	23 16.9

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND BESSEL'S NOTATION.

$$A = \tau - 0.34243 \sin \text{☊} + 0.00410 \sin 2\,\text{☊} - 0.02519 \sin 2\odot + 0.00294 \sin (\odot + 82^\circ\, 17').$$
$$B = -9''.2237 \cos \text{☊} + 0''.0896 \cos 2\,\text{☊} - 0''.5507 \cos 2\odot - 0''.0093 \cos (\odot + 280^\circ\, 45').$$
$$C = -20''.4451 \cos \omega \cos \odot.$$
$$D = -20''.4451 \sin \odot.$$
$$E = -0''.0467 \sin \text{☊} + 0''.0015 \sin 2\,\text{☊} - 0''.0034 \sin 2\odot.$$

$$a = 3^{\mathrm{s}}.07221 + 1^{\mathrm{s}}.33696 \sin \alpha \tan \delta.$$
$$b = \tfrac{1}{15} \cos \alpha \tan \delta.$$
$$c = \tfrac{1}{15} \cos \alpha \sec \delta.$$
$$d = \tfrac{1}{15} \sin \alpha \sec \delta.$$

$$a' = 20''.0544 \cos \alpha.$$
$$b' = - \sin \alpha.$$
$$c' = \tan \omega \cos \delta - \sin \alpha \sin \delta.$$
$$d' = \cos \alpha \sin \delta.$$

μ = the annual proper motion in right ascension.
μ' = the annual proper motion in declination.

τ = the time reckoned from Jan. $0 - {}^{\mathrm{d}}.438$, (when the sun's mean longitude is 280°,) and expressed in fractional parts of a tropical year.
$\odot$ = the sun's true longitude.
☊ = the longitude of the moon's ascending node.
ω = the obliquity of the ecliptic.

α = the star's mean right ascension for the beginning of the year.
δ = the star's mean declination for the beginning of the year.

α' = the star's apparent right ascension at the time τ.
δ' = the star's apparent declination at the time τ.

$$\alpha' - \alpha = A a + B b + C c + D d + E + \tau \mu.$$
$$\delta' - \delta = A a' + B b' + C c' + D d' + \tau \mu'.$$

The following formulæ may also be used by putting

$$f = 46''.0831\, A + E = 3^{\mathrm{s}}.07221\, A + \tfrac{1}{15} E. \qquad i = C \tan \omega.$$
$$g \cos G = 20''.0544\, A. \qquad h \sin H = C.$$
$$g \sin G = B \qquad h \cos H = D.$$
$$\alpha' - \alpha = f + \tau \mu + g \sin (G + \alpha) \frac{\tan \delta}{15} + h \sin (H + \alpha) \frac{\sec \delta}{15}.$$
$$\delta' - \delta = \tau \mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta + i \cos \delta.$$

Tables V. and VI. of the Appendix contain the following terms, which may be added to A and B, when great accuracy is required:

$$\Delta A = -0.00405 \sin 2\,\text{☾} + 0.00135 \sin (\text{☾} - \Gamma') + 0.00025 \sin (2\odot - \text{☊})$$
$$+ 0.00010 \sin 2 (\odot - \Gamma') - 0.00005 \sin 2 (\odot - \text{☊}) + 0.00009 \sin (2\Gamma' - \text{☊})$$
$$+ 0.00005 \cos \Gamma' + 0.00004 \sin 2\Gamma' - 0.00011 \sin (3\odot - \Gamma).$$

$$\Delta B = -0''.0886 \cos 2\,\text{☾} + 0''.0067 \cos (2\odot - \text{☊}) + 0''.0024 \cos (2\Gamma' - \text{☊})$$
$$- 0''.0023 \sin \Gamma' + 0''.0008 \cos 2\Gamma' - 0''.0027 \cos (3\odot - \Gamma).$$

In which—

☾ = the moon's mean longitude.
Γ = the longitude of the sun's perigee.
Γ = the longitude of the moon's perigee.

Other terms, which become sensible for stars very near the pole, will be found on page 497.

MEAN PLACES FOR 1873.0. (Jan. 0^d—.438, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
α Andromedæ . . .	2	0 1 49.557	+ 3.088	+28 23 21.87	+19.90
γ Pegasi (*Algenib*) .	3.2	0 6 41.866	3.083	+14 28 39.46	20.05
* β Hydri	3	0 19 2.384	3.255	−77 58 13.69	20.24
α Cassiopeæ	var.	0 33 18.774	3.365	+55 50 25.45	19.80
β Ceti	2	0 37 12.781	3.013	−18 41 2.22	19.83
*21 Cassiopeæ	6	0 37 17.861	+ 3.831	+74 17 34.31	+19.73
ε Piscium	4	0 56 21.205	3.110	+ 7 12 21.52	19.48
* α Ursæ Min. (*Polaris*)	2	1 12 18.728	20.570	+88 37 55.70	19.06
θ¹ Ceti	3	1 17 40.537	2.998	− 8 50 20.40	18.72
*38 Cassiopeæ	6	1 21 48.701	4.354	+69 36 35.47	18.71
η Piscium	4.3	1 24 41.323	+ 3.200	+14 41 26.36	+18.72
α Eridani (*Achernar*)	1	1 32 58.728	2.234	−57 52 56.25	18.42
υ Piscium	4	1 38 41.396	3.162	+ 8 31 3.86	18.26
β Arietis	3.2	1 47 37.636	3.301	+20 11 11.44	17.79
*50 Cassiopeæ	4	1 52 37.906	4.980	+71 48 17.42	17.68
α Arietis	2	2 0 1.055	+ 3.368	+22 51 39.53	+17.23
ξ¹ Ceti	4.5	2 6 16.171	3.169	+ 8 14 59.60	17.08
* ι Cassiopeæ	4	2 18 37.671	4.841	+66 49 45.25	16.48
γ Ceti	3.4	2 36 43.292	3.103	+ 2 41 57.94	15.39
α Ceti	2.3	2 55 38.524	3.129	+ 3 35 24.22	14.36
*48 Cephei (H.) . . .	6	3 4 17.259	+ 7.349	+77 15 50.53	+13.85
ζ Arietis	4.5	3 7 36.269	3.437	+20 34 20.89	13.65
α Persei	2	3 15 15.869	4.248	+49 24 24.63	13.16
δ Persei	3	3 33 53.290	4.240	+47 22 44.24	11.89
η Tauri	3	3 39 56.255	3.554	+23 42 38.03	11.46
ζ Persei	3	3 46 9.140	+ 3.756	+31 30 15.79	+11.03
γ¹ Eridani	3	3 52 6.270	2.797	−13 52 15.72	10.53
γ Tauri	4	4 12 34.054	3.407	+15 19 9.01	9.06
ε Tauri	4.3	4 21 12.141	3.496	+18 53 48.96	8.37
α Tauri (*Aldebaran*) .	1	4 28 38.099	3.436	+16 15 7.73	7.62
* 9 Camelopardalis . .	4	4 41 26.184	+ 5.914	+66 7 23.81	+ 6.75
ι Aurigæ	3	4 48 43.508	3.897	+32 57 45.85	6.12
11 Orionis	5	4 57 18.848	3.425	+15 13 30.97	5.41
α Aurigæ (*Capella*) .	1	5 7 18.598	4.422	+45 51 57.48	4.15
β Orionis (*Rigel*) . .	1	5 8 26.098	2.881	− 8 21 0.46	4.47
β Tauri	2	5 18 15.876	+ 3.788	+28 29 51.85	+ 3.46
* Groombridge 966 .	6.7	5 22 45.643	7.988	+74 57 15.12	3.24
δ Orionis	2	5 25 31.166	3.064	− 0 23 42.63	3.00
α Leporis	3	5 27 7.821	2.646	−17 54 52.93	2.89
ε Orionis	2	5 29 46.180	3.042	− 1 17 5.75	2.64
α Columbæ	2	5 35 3.097	+ 2.173	−34 8 34.50	+ 2.16
α Orionis	var.	5 48 17.809	3.247	+ 7 22 52.87	+ 1.04
*22 Camelopardalis (H.)	5.4	6 4 50.696	6.619	+69 21 36.67	− 0.53
μ Geminorum . . .	3	6 15 16.661	3.633	+22 34 35.69	1.44
α Argus (*Canopus*) .	1	6 21 8.071	1.330	−52 37 37.57	1.85
γ Geminorum . . .	2.3	6 30 22.523	+ 3.469	+16 30 20.43	− 2.68
α Canis Maj. (*Sirius*) .	1	6 39 33.064	2.645	−16 32 36.32	4.65
*51 Cephei (H.) . . .	5	6 40 13.916	30.277	+87 14 11.61	3.54
ε Canis Majoris . .	2.1	6 53 38.161	+ 2.358	−28 48 2.35	− 4.65

*Circumpolar Stars.

MEAN PLACES FOR 1873.0. (Jan. 0^d—.438, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
δ Canis Majoris	2	7 3 13.713	+ 2.440	−26 11 33.38	− 5.43
δ Geminorum	3.4	7 12 32.253	3.591	+22 12 51.03	6.23
* Piazzi vii. 67	6	7 17 38.799	6.313	+68 43 15.22	6.74
α Geminor. (*Castor*)	2.1	7 26 29.368	3.839	+32 9 52.82	7.46
α Can. Min. (*Procyon*)	1	7 32 39.267	3.146	+ 5 32 54.79	8.93
β Geminor. (*Pollux*)	1.2	7 37 32.550	+ 3.682	+28 19 51.66	− 8.32
φ Geminorum	5	7 45 43.408	3.684	+27 5 32.96	8.94
* 3 Ursæ Majoris (H.)	6	8 0 8.838	6.069	+68 50 39.75	10.05
15 Argus (ι)	3	8 2 8.213	2.556	−23 56 21.58	10.12
ε Hydræ	3.4	8 40 3.015	3.184	+ 6 53 0.60	12.92
ι Ursæ Majoris	3	8 50 30.149	4.140	+48 32 18.03	−13.85
*σ^2 Ursæ Majoris	5	8 59 11.300	+ 5.377	+67 38 49.84	14.23
κ Cancri	5	9 0 52.001	3.255	+11 10 41.23	14.21
ι Argus	2	9 13 41.352	1.601	−58 44 31.82	14.93
* 1 Draconis (H.)	4.5	9 18 47.719	9.129	+81 53 4.49	15.29
α Hydræ	2	9 21 20.804	+ 2.950	− 8 6 32.68	−15.39
* d Ursæ Majoris	5.4	9 23 12.682	5.428	+70 23 10.55	15.49
θ Ursæ Majoris	3	9 24 20.991	4.050	+52 15 16.61	16.16
ε Leonis	3	9 38 38.381	3.420	+24 21 28.90	16.36
μ Leonis	4	9 45 32.199	3.424	+26 36 14.65	16.75
α Leonis (*Regulus*)	1.2	10 1 36.444	+ 3.203	+12 35 14.24	−17.42
*32 Ursæ Majoris	6	10 8 47.139	4.440	+65 44 25.55	17.77
γ^1 Leonis	2	10 12 58.077	3.317	+20 29 0.15	18.03
* 9 Draconis (H.)	5.4	10 24 14.422	5.309	+76 21 56.73	18.36
ρ Leonis	4	10 26 7.424	3.166	+ 9 57 34.20	18.39
η Argus	2	10 40 8.291	+ 2.310	−59 0 59.01	−18.76
l Leonis	5	10 42 34.813	3.159	+11 13 0.82	18.92
α Ursæ Majoris	2	10 55 52.314	3.760	+62 26 9.35	19.36
δ Leonis	2.3	11 7 21.159	3.202	+21 13 9.80	19.65
δ Crateris	3.4	11 12 59.568	2.996	−14 5 28.84	19.44
τ Leonis	5	11 21 24.378	+ 3.088	+ 3 33 20.08	−19.78
* λ Draconis	3.4	11 23 50.285	3.639	+70 1 52.77	19.86
υ Leonis	5.4	11 30 26.823	3.072	− 0 7 21.20	19.84
β Leonis	2	11 42 34.841	3.066	+15 16 56.04	20.09
γ Ursæ Majoris	2.3	11 47 8.474	3.188	+54 24 3.03	20.02
ο Virginis	4	11 58 44.397	+ 3.060	+ 9 26 19.14	−20.00
* 4 Draconis (H.)	5.4	12 6 13.563	2.906	+78 19 17.78	20.05
* β Chamæleontis	5	12 10 55.956	3.344	−78 36 26.09	20.04
η Virginis	3.4	12 13 24.548	3.068	+ 0 2 21.69	20.03
α^1 Crucis	1	12 19 32.494	3.267	−62 23 37.97	19.93
β Corvi	2.3	12 27 43.156	+ 3.138	−22 41 37.19	−19.95
* κ Draconis	3.4	12 28 3.091	2.601	+70 29 17.30	19.93
*32 Camelop. (H.) (*foll.*)	5.4	12 48 13.074	0.356	+84 6 10.27	19.63
12 Canum Venaticorum	3	12 50 5.052	2.817	+39 0 17.38	19.51
θ Virginis	4.5	13 3 22.582	3.101	− 4 51 36.62	19.31
α Virginis (*Spica*)	1	13 18 30.295	+ 3.153	−10 29 50.79	−18.91
ζ Virginis	3.4	13 28 13.390	3.053	+ 0 3 16.28	18.52
η Ursæ Majoris	2	13 42 32.108	2.374	+49 56 52.16	18.10
η Bootis	3	13 48 38.305	2.858	+19 2 7.92	18.18
β Centauri	1	13 54 52.745	+ 4.164	−59 45 32.59	−17.66

*Circumpolar Stars.

MEAN PLACES FOR 1873.0. (Jan. 0—$\overset{d}{.}$438, Washington.)

Star's Name.	Magnitude.	Right Ascension.			An. Variation.	Declination.			An. Variation.
		h	m	s	s	°	′	″	″
* α Draconis	3.4	14	0	57.134	+ 1.623	+64	58	58.32	−17.36
α Bootis (*Arcturus*) .	1	14	9	52.145	2.734	+19	50	41.86	18.88
θ Bootis	4.3	14	20	52.358	+ 2.043	+52	26	19.22	16.78
* 5 Ursæ Minoris . . .	5.4	14	27	49.194	− 0.210	+76	15	36.49	16.05
α^2 Centauri	1	14	31	0.360	+ 4.034	−60	18	24.60	15.04
ε Bootis	2.3	14	39	26.467	+ 2.621	+27	36	39.46	−15.36
α^2 Libræ	2.3	14	43	51.320	+ 3.307	−15	30	44.10	15.20
* β Ursæ Minoris . . .	2	14	51	5.891	− 0.248	+74	40	26.84	14.75
β Bootis	3	14	57	9.728	+ 2.260	+40	53	33.39	14.39
β Libræ	2	15	10	10.495	3.220	− 8	54	44.44	13.54
μ^1 Bootis	4.3	15	19	41.628	+ 2.268	+37	49	25.90	−12.81
* γ^2 Ursæ Minoris . . .	3	15	20	56.783	− 0.146	+72	17	9.73	12.80
α Coronæ Borealis . .	2	15	29	18.675	+ 2.539	+27	8	37.35	12.33
α Serpentis	2.3	15	38	0.787	2.950	+ 6	49	37.31	11.58
ε Serpentis	3.4	15	44	29.203	+ 2.987	+ 4	51	42.48	11.10
* ζ Ursæ Minoris . . .	4.5	15	48	38.487	− 2.285	+78	11	2.64	−10.88
ε Coronæ Borealis . .	4	15	52	19.898	+ 2.485	+27	14	50.60	10.64
δ Scorpii	2.3	15	52	49.598	3.536	−22	15	27.56	10.56
β^1 Scorpii	2	15	58	3.264	3.477	−19	27	20.53	10.20
* Groombridge 2320 .	6.5	16	5	58.861	0.133	+68	8	41.45	9.50
δ Ophiuchi	3	16	7	41.478	+ 3.138	− 3	21	54.44	− 9.57
τ Herculis	3.4	16	15	55.317	1.798	+46	37	0.67	8.77
α Scorpii (*Antares*) .	1.2	16	21	37.417	3.669	−26	8	51.80	8.37
η Draconis	3.2	16	22	16.575	+ 0.804	+61	48	7.55	8.23
* A Draconis	5	16	28	14.524	− 0.142	+69	2	34.24	7.78
ζ Ophiuchi	3.2	16	30	10.026	+ 3.298	−10	18	26.69	− 7.61
* α Trianguli Australis .	2	16	35	14.405	6.284	−68	47	26.09	7.33
η Herculis	3	16	38	32.553	2.054	+39	9	55.43	7.04
κ Ophiuchi	3.4	16	51	39.408	2.835	+ 9	34	28.62	5.87
d Herculis	5	16	56	54.908	+ 2.209	+33	45	14.08	5.42
* ε Ursæ Minoris . . .	4.5	16	59	3.665	− 6.382	+82	14	33.32	− 5.27
α^1 Herculis	var.	17	8	51.414	+ 2.733	+14	32	13.60	4.39
44 Ophiuchi	5	17	18	36.919	3.659	−24	3	19.45	3.69
β Draconis	3.2	17	27	33.776	1.351	+52	23	45.99	2.83
α Ophiuchi	2	17	29	2.353	+ 2.782	+12	39	16.36	2.92
* ω Draconis	5	17	37	41.832	− 0.355	+68	48	57.27	− 1.66
μ Herculis	3.4	17	41	29.322	+ 2.345	+27	47	48.35	2.34
* ψ^1 Draconis (*pr.*) . .	4.5	17	44	12.049	− 1.083	+72	12	38.09	1.64
γ Draconis	2.3	17	53	39.583	+ 1.394	+51	30	16.62	0.59
γ^3 Sagittarii	3.4	17	57	39.019	3.852	−30	25	22.87	− 0.43
μ^1 Sagittarii	4	18	6	10.098	+ 3.586	−21	5	22.08	+ 0.54
* σ Octantis	6	18	11	46.173	+109.011	−89	16	40.49	1.03
* δ Ursæ Minoris . . .	4.5	18	13	18.149	−19.411	+86	36	25.05	1.20
η Serpentis	3	18	14	44.247	+ 3.099	− 2	55	45.82	0.62
i Aquilæ (3 H. Scuti)	4.5	18	28	17.697	3.264	− 8	19	49.61	2.16
α Lyræ (*Vega*) . . .	1	18	32	38.307	+ 2.032	+38	40	0.38	+ 3.13
β Lyræ	var.	18	45	23.455	2.214	+33	12	59.87	3.93
σ Sagittarii . . .	2.3	18	47	23.392	+ 3.723	−26	27	5.99	4.06
* 50 Draconis	6	18	50	27.419	− 1.898	+75	16	57.62	4.44
ζ Aquilæ	3	18	59	34.295	+ 2.755	+13	40	35.99	+ 5.07

* Circumpolar Stars.

MEAN PLACES FOR 1873.0. (Jan. 0—$\overset{\mathrm{d}}{.}$438, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
d Sagittarii	5	19 10 12.179	+ 3.513	−19 10 32.78	+ 6.09
* δ Draconis	3	19 12 31.207	+ 0.033	+67 26 16.75	6.31
* τ Draconis	5	19 17 58.931	− 1.107	+73 7 7.79	6.79
δ Aquilæ	3.4	19 19 5.633	+ 3.024	+ 2 51 49.20	6.88
κ Aquilæ	5	19 30 3.463	3.230	− 7 18 26.57	7.70
γ Aquilæ	3	19 40 13.291	+ 2.853	+10 18 20.04	+ 8.50
α Aquilæ (*Altair*) .	1.2	19 44 35.172	+ 2.928	+ 8 32 5.02	9.22
* ε Draconis	4	19 48 35.443	− 0.172	+69 56 38.68	9.15
β Aquilæ	4	19 49 4.456	+ 2.947	+ 6 5 29.05	8.72
* λ Ursæ Minoris . .	6.7	19 51 18.451	−60.058	+88 55 32.34	9.36
τ Aquilæ	6.5	19 57 56.133	+ 2.933	+ 6 55 17.11	+ 9.89
α² Capricorni . . .	3.4	20 11 0.369	+ 3.333	−12 56 11.45	10.86
* κ Cephei	4.5	20 13 7.429	− 1.896	+77 19 39.15	11.00
α Pavonis	2	20 15 35.569	+ 4.794	−57 8 20.16	11.15
π Capricorni . . .	5	20 20 2.982	3.441	−18 37 33.39	11.48
ε Delphini	4	20 27 8.689	+ 2.866	+10 52 23.62	+11.99
* Groombridge 3241 .	6.7	20 30 32.309	− 0.214	+72 6 4.87	12.22
α Cygni	2.1	20 37 6.148	+ 2.044	+44 49 38.79	12.69
μ Aquarii	5.4	20 45 48.096	3.240	− 9 27 28.60	13.26
ν Cygni	4	20 52 26.314	+ 2.234	+40 40 46.39	13.72
* 12 Year Cat. 1879 .	6	20 53 16.564	− 2.498	+80 4 28.10	+13.71
61 Cygni (*pr.*) . . .	5.6	21 1 12.359	+ 2.687	+38 7 34.26	17.50
ζ Cygni	3	21 7 31.877	2.550	+29 42 25.82	14.58
α Cephei	3.2	21 15 32.828	1.437	+62 2 51.32	15.11
1 Pegasi	4.5	21 16 12.861	2.774	+19 15 45.51	15.23
β Aquarii	3	21 24 52.326	+ 3.164	− 6 7 41.97	+15.64
* β Cephei	3	21 27 0.760	0.800	+70 0 11.20	15.71
ξ Aquarii	5.4	21 30 59.361	3.198	− 8 25 20.37	15.95
ε Pegasi	2.3	21 37 56.924	2.948	+ 9 17 38.36	16.33
* 11 Cephei	5	21 40 3.269	0.907	+70 43 36.03	16.50
μ Capricorni . . .	5	21 46 22.215	+ 3.279	−14 8 52.68	+16.77
* 79 Draconis	6.7	21 51 17.177	0.737	+73 6 5.29	16.96
α Aquarii	3	21 59 15.613	3.084	− 0 56 8.66	17.33
α Gruis	2	22 0 13.186	3.813	−47 34 28.39	17.20
θ Aquarii	4.5	22 10 7.850	3.170	− 8 24 52.63	17.78
π Aquarii	5.4	22 18 47.440	+ 3.065	+ 0 44 1.84	+18.13
η Aquarii	4.3	22 28 49.770	3.084	− 0 46 16.40	18.44
*226 Cephei (B.) . . .	5.6	22 30 2.177	1.083	+75 34 18.86	18.52
ζ Pegasi	3.4	22 35 7.637	2.988	+10 10 9.56	18.70
* ι Cephei	4.3	22 45 9.761	2.118	+65 31 57.62	18.85
λ Aquarii	4	22 45 59.215	+ 3.131	− 8 15 16.26	+19.07
α Pis. Aus. (*Fomalhaut*)	1.2	22 50 37.719	3.329	−30 17 40.19	18.99
α Pegasi (*Markab*) .	2	22 58 26.134	2.985	+14 31 21.67	19.31
* ο Cephei	6.5	23 13 25.174	2.437	+67 24 59.40	19.62
θ Piscium	4.5	23 21 31.539	3.041	+ 5 40 55.18	19.75
ι Piscium	4.5	23 33 25.158	+ 3.085	+ 4 56 17.91	+19.48
* γ Cephei	3.4	23 31 9.003	2.404	+76 55 25.00	20.07
* Groombridge 4163 .	7	23 48 40.624	2.850	+73 42 12.28	20.00
ω Piscium	4	23 52 47.440	+ 3.078	+ 6 9 37.45	+19.94

* Circumpolar Stars.

APPARENT PLACES OF *a* URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 11	° ′ 88 38		h m 1 11	° ′ 88 38		h m 1 11	° ′ 88 37		h m 1 11	° ′ 88 37
	s	″		s	″		s	″		s	″
0.3	70.67	11.7	1.2	41.24	11.8	1.1	20.57	66.9	1.0	10.60	58.0
1.3	69.68	11.8	2.2	40.37	11.7	2.1	20.03	66.6	2.0	10.64	57.7
2.3	68.67	11.9	3.2	39.57	11.5	3.1	19.57	66.3	3.0	10.67	57.4
3.3	67.66	12.0	4.2	38.81	11.4	4.1	19.13	66.1	4.0	10.69	57.2
4.3	66.70	12.1	5.2	38.09	11.3	5.1	18.72	65.8	5.0	10.66	56.9
5.3	65.76	12.1	6.2	37.36	11.2	6.1	18.30	65.6	6.0	10.60	56.6
6.3	64.88	12.1	7.2	36.61	11.1	7.1	17.87	65.4	7.0	10.53	56.4
7.2	64.05	12.2	8.2	35.83	11.0	8.1	17.39	65.1	8.0	10.45	56.1
8.2	63.24	12.2	9.2	35.00	10.9	9.1	16.89	64.9	9.0	10.42	55.7
9.2	62.43	12.3	10.2	34.14	10.7	10.1	16.35	64.6	10.0	10.43	55.4
10.2	61.61	12.4	11.2	33.25	10.6	11.1	15.81	64.4	11.0	10.51	55.0
11.2	60.74	12.4	12.2	32.36	10.5	12.1	15.28	64.1	12.0	10.66	54.7
12.2	59.84	12.5	13.1	31.48	10.3	13.1	14.79	63.8	13.0	10.87	54.4
13.2	58.87	12.6	14.1	30.65	10.1	14.1	14.37	63.5	14.0	11.11	54.1
14.2	57.87	12.6	15.1	29.87	9.9	15.1	14.01	63.2	15.0	11.38	53.8
15.2	56.83	12.6	16.1	29.16	9.6	16.1	13.71	62.8	16.0	11.66	53.5
16.2	55.80	12.6	17.1	28.50	9.4	17.1	13.47	62.5	17.0	11.90	53.2
17.2	54.79	12.6	18.1	27.88	9.2	18.1	13.26	62.2	18.0	12.12	53.0
18.2	53.81	12.6	19.1	27.28	9.0	19.1	13.06	61.9	19.0	12.31	52.7
19.2	52.89	12.5	20.1	26.68	8.8	20.1	12.86	61.7	20.0	12.48	52.5
20.2	52.01	12.5	21.1	26.06	8.7	21.1	12.63	61.4	21.0	12.63	52.2
21.2	51.19	12.4	22.1	25.41	8.5	22.0	12.37	61.2	22.0	12.80	51.9
22.2	50.38	12.4	23.1	24.71	8.3	23.0	12.07	60.9	23.0	13.00	51.6
23.2	49.58	12.4	24.1	23.99	8.1	24.0	11.76	60.6	24.0	13.26	51.3
24.2	48.76	12.3	25.1	23.25	7.9	25.0	11.47	60.3	25.0	13.58	51.0
25.2	47.91	12.3	26.1	22.52	7.7	26.0	11.16	60.0	25.9	13.96	50.6
26.2	47.01	12.3	27.1	21.82	7.4	27.0	10.92	59.7	26.9	14.41	50.4
27.2	46.07	12.3	28.1	21.16	7.2	28.0	10.73	59.3	27.9	14.88	50.1
28.2	45.09	12.2	29.1	20.57	6.9	29.0	10.62	59.0	28.9	15.38	49.8
29.2	44.09	12.2	30.1	20.03	6.6	30.0	10.57	58.6	29.9	15.87	49.6
30.2	43.10	12.1	31.1	19.57	6.3	31.0	10.57	58.3	30.9	16.33	49.4
31.2	42.15	12.0	32.1	19.13	6.1	32.0	10.60	58.0	31.9	16.76	49.1

APPARENT PLACES OF *a* URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 11	° ′ 88 37		h m 1 11	° ′ 88 37		h m 1 12	° ′ 88 37		h m 1 12	° ′ 88 37
	s	″		s	″		s	″		s	″
1.9	16.76	49.1	1.9	35.80	43.2	1.8	1.45	41.9	1.7	28.95	45.7
2.9	17.13	48.9	2.8	36.49	43.1	2.8	2.38	41.9	2.7	29.87	45.9
3.9	17.49	48.7	3.8	37.22	42.9	3.8	3.35	41.9	3.7	30.76	46.1
4.9	17.84	48.4	4.8	38.02	42.8	4.8	4.36	42.0	4.7	31.61	46.4
5.9	18.21	48.2	5.8	38.86	42.6	5.8	5.37	42.0	5.7	32.40	46.6
6.9	18.62	47.9	6.8	39.77	42.5	6.8	6.38	42.1	6.7	33.13	46.9
7.9	19.09	47.6	7.8	40.69	42.4	7.8	7.35	42.2	7.7	33.83	47.1
8.9	19.64	47.4	8.8	41.63	42.3	8.7	8.28	42.3	8.7	34.50	47.3
9.9	20.24	47.1	9.8	42.55	42.3	9.7	9.14	42.4	9.7	35.16	47.6
10.9	20.89	46.9	10.8	43.44	42.2	10.7	9.97	42.6	10.7	35.86	47.8
11.9	21.56	46.6	11.8	44.28	42.2	11.7	10.76	42.7	11.7	36.58	48.0
12.9	22.24	46.4	12.8	45.07	42.2	12.7	11.54	42.8	12.7	37.35	48.2
13.9	22.91	46.3	13.8	45.83	42.1	13.7	12.35	42.8	13.7	38.16	48.4
14.9	23.54	46.1	14.8	46.58	42.1	14.7	13.19	42.9	14.6	39.00	48.7
15.9	24.12	45.9	15.8	47.33	42.0	15.7	14.07	43.0	15.6	39.84	48.9
16.9	24.69	45.7	16.8	48.11	42.0	16.7	14.99	43.1	16.6	40.67	49.2
17.9	25.23	45.6	17.8	48.94	41.9	17.7	15.96	43.2	17.6	41.46	49.5
18.9	25.77	45.4	18.8	49.81	41.8	18.7	16.95	43.3	18.6	42.20	49.8
19.9	26.32	45.2	19.8	50.75	41.7	19.7	17.94	43.4	19.6	42.87	50.1
20.9	26.93	45.0	20.8	51.72	41.7	20.7	18.91	43.6	20.6	43.48	50.4
21.9	27.58	44.7	21.8	52.73	41.7	21.7	19.84	43.8	21.6	44.05	50.7
22.9	28.29	44.5	22.8	53.73	41.7	22.7	20.71	44.0	22.6	44.60	51.0
23.9	29.06	44.3	23.8	54.70	41.7	23.7	21.54	44.2	23.6	45.17	51.3
24.9	29.86	44.2	24.8	55.64	41.8	24.7	22.31	44.3	24.6	45.75	51.6
25.9	30.69	44.0	25.8	56.52	41.8	25.7	23.06	44.5	25.6	46.38	51.8
26.9	31.52	43.9	26.8	57.36	41.8	26.7	23.80	44.7	26.6	47.06	52.1
27.9	32.32	43.8	27.8	58.16	41.9	27.7	24.56	44.8	27.6	47.77	52.4
28.9	33.08	43.7	28.8	58.95	41.9	28.7	25.36	45.0	28.6	48.49	52.7
29.9	33.79	43.6	29.8	59.75	41.9	29.7	26.20	45.1	29.6	49.21	53.0
30.9	34.47	43.4	30.8	60.58	41.9	30.7	27.08	45.3	30.6	49.90	53.3
31.9	35.13	43.3	31.8	61.45	41.9	31.7	28.01	45.5	31.6	50.53	53.7
32.9	35.80	43.2	32.8	62.38	41.9	32.7	28.95	45.7	32.6	51.12	54.0

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 12	° ′ 88 37		h m 1 13	° ′ 88 38		h m 1 12	° ′ 88 38		h m 1 12	° ′ 88 38
	s	″		s	″		s	″		s	″
1.6	51.12	54.0	1.5	2.92	4.9	1.4	62.54	16.8	1.3	49.72	26.7
2.6	51.65	54.4	2.5	3.01	5.3	2.4	62.31	17.1	2.3	49.19	26.9
3.6	52.12	54.7	3.5	3.09	5.6	3.4	62.13	17.4	3.3	48.65	27.2
4.6	52.55	55.1	4.5	3.21	6.0	4.4	61.96	17.8	4.3	48.08	27.5
5.6	52.97	55.4	5.5	3.34	6.3	5.4	61.81	18.2	5.3	47.47	27.8
6.6	53.40	55.7	6.5	3.52	6.7	6.4	61.62	18.5	6.3	46.79	28.1
7.6	53.86	56.0	7.5	3.74	7.0	7.4	61.40	18.9	7.3	46.05	28.4
8.6	54.36	56.3	8.5	3.96	7.4	8.4	61.12	19.3	8.3	45.25	28.7
9.6	54.89	56.6	9.5	4.18	7.8	9.4	60.77	19.7	9.3	44.42	28.9
10.6	55.46	57.0	10.5	4.38	8.2	10.4	60.37	20.1	10.3	43.59	29.1
11.6	56.02	57.3	11.5	4.53	8.6	11.4	59.91	20.5	11.3	42.77	29.3
12.6	56.58	57.7	12.5	4.62	9.1	12.4	59.43	20.8	12.3	41.99	29.5
13.6	57.11	58.0	13.5	4.64	9.5	13.4	58.93	21.2	13.3	41.23	29.7
14.6	57.59	58.4	14.5	4.60	9.9	14.4	58.45	21.5	14.3	40.51	29.9
15.6	58.02	58.8	15.5	4.51	10.3	15.4	58.01	21.8	15.3	39.84	30.1
16.6	58.38	59.2	16.5	4.41	10.7	16.4	57.61	22.1	16.3	39.17	30.3
17.6	58.69	59.6	17.5	4.32	11.1	17.4	57.24	22.4	17.3	38.48	30.5
18.6	58.97	60.0	18.5	4.25	11.4	18.4	56.89	22.7	18.3	37.77	30.7
19.6	59.23	60.3	19.5	4.22	11.8	19.4	56.53	23.0	19.3	37.01	31.0
20.5	59.51	60.7	20.5	4.21	12.1	20.4	56.15	23.4	20.3	36.17	31.2
21.5	59.82	61.0	21.5	4.25	12.5	21.4	55.73	23.7	21.3	35.31	31.4
22.5	60.18	61.3	22.5	4.28	12.9	22.4	55.24	24.1	22.3	34.40	31.6
23.5	60.57	61.7	23.5	4.30	13.3	23.4	54.68	24.4	23.3	33.46	31.7
24.5	60.98	62.0	24.5	4.29	13.7	24.4	54.07	24.8	24.3	32.51	31.9
25.5	61.39	62.4	25.5	4.23	14.1	25.4	53.42	25.1	25.3	31.59	32.0
26.5	61.78	62.8	26.4	4.10	14.5	26.4	52.75	25.4	26.3	30.70	32.1
27.5	62.13	63.2	27.4	3.91	14.9	27.4	52.09	25.7	27.3	29.86	32.2
28.5	62.42	63.6	28.4	3.66	15.3	28.4	51.44	25.9	28.3	29.06	32.3
29.5	62.63	64.1	29.4	3.38	15.7	29.4	50.83	26.2	29.3	28.29	32.5
30.5	62.80	64.5	30.4	3.08	16.1	30.4	50.25	26.4	30.3	27.52	32.6
31.5	62.92	64.9	31.4	2.80	16.4	31.3	49.72	26.7	31.3	26.74	32.7
32.5	63.01	65.3	32.4	2.54	16.8	32.3	49.19	26.9	32.3	25.92	32.9

APPARENT PLACES OF 51 CEPHEI, (*Hev.,*) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Date. Solar	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14
	s	″		s	″		s	″		s	″
0.5	34.53	16.4	1.4	33.06	26.7	1.3	25.14	33.3	1.2	12.49	35.6
1.5	34.65	16.7	2.4	32.81	27.0	2.3	24.73	33.4	2.2	12.10	35.6
2.5	34.72	17.1	3.4	32.57	27.2	3.3	24.33	33.6	3.2	11.72	35.5
3.5	34.76	17.5	4.4	32.35	27.5	4.3	23.95	33.7	4.2	11.37	35.5
4.5	34.78	17.8	5.4	32.14	27.7	5.3	23.59	33.8	5.2	11.00	35.5
5.5	34.78	18.1	6.4	31.96	28.0	6.3	23.25	33.9	6.2	10.63	35.5
6.5	34.79	18.5	7.4	31.79	28.2	7.3	22.92	34.0	7.2	10.23	35.5
7.5	34.79	18.8	8.4	31.61	28.5	8.3	22.59	34.2	8.2	9.80	35.5
8.5	34.83	19.0	9.4	31.42	28.8	9.3	22.23	34.3	9.2	9.35	35.4
9.5	34.87	19.3	10.4	31.21	29.1	10.3	21.85	34.5	10.2	8.88	35.4
10.5	34.93	19.6	11.4	30.97	29.4	11.3	21.45	34.7	11.2	8.43	35.3
11.5	35.00	20.0	12.4	30.69	29.6	12.3	21.02	34.8	12.2	7.98	35.2
12.5	35.05	20.3	13.4	30.39	29.9	13.3	20.58	34.9	13.2	7.55	35.1
13.5	35.09	20.6	14.4	30.06	30.2	14.3	20.11	35.0	14.2	7.16	35.0
14.5	35.09	21.0	15.4	29.72	30.4	15.3	19.65	35.1	15.2	6.79	34.8
15.5	35.06	21.4	16.4	29.38	30.7	16.3	19.20	35.2	16.2	6.44	34.7
16.4	35.00	21.7	17.4	29.05	30.8	17.3	18.77	35.2	17.2	6.11	34.6
17.4	34.91	22.1	18.4	28.74	31.0	18.3	18.36	35.2	18.2	5.79	34.5
18.4	34.79	22.4	19.4	28.45	31.2	19.3	17.98	35.3	19.2	5.46	34.4
19.4	34.68	22.7	20.4	28.18	31.4	20.3	17.61	35.3	20.2	5.11	34.3
20.4	34.56	23.0	21.4	27.91	31.6	21.3	17.25	35.4	21.2	4.74	34.2
21.4	34.46	23.3	22.4	27.65	31.8	22.3	16.88	35.4	22.2	4.35	34.1
22.4	34.37	23.6	23.3	27.37	32.0	23.3	16.50	35.5	23.2	3.94	34.0
23.4	34.29	23.9	24.3	27.06	32.3	24.3	16.10	35.6	24.2	3.53	33.9
24.4	34.21	24.1	25.3	26.72	32.5	25.3	15.67	35.7	25.2	3.12	33.7
25.4	34.15	24.4	26.3	26.36	32.7	26.3	15.21	35.7	26.2	2.73	33.6
26.4	34.07	24.8	27.3	25.96	32.9	27.3	14.73	35.8	27.2	2.37	33.4
27.4	33.97	25.1	28.3	25.56	33.1	28.3	14.25	35.8	28.2	2.03	33.2
28.4	33.85	25.4	29.3	25.14	33.3	29.3	13.78	35.8	29.2	1.72	33.0
29.4	33.70	25.8	30.3	24.73	33.4	30.3	13.33	35.7	30.2	1.43	32.8
30.4	33.51	26.1	31.3	24.33	33.6	31.2	12.89	35.7	31.2	1.16	32.6
31.4	33.29	26.4	32.3	23.95	33.7	32.2	12.49	35.6	32.2	0.89	32.4

APPARENT PLACES OF 51 CEPHEI, (*Hev,*) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 39	° ' 87 14		h m 6 39	° ' 87 14		h m 6 39	° ' 87 14		h m 6 40	° ' 87 14
	s	"		s	"		s	"		s	"
1.2	61.16	32.6	1.1	54.36	25.3	1.0	54.34	16.4	1.9	1.67	7.1
2.2	60.89	32.4	2.1	54.23	25.1	2.0	54.40	16.1	2.9	2.04	6.8
3.2	60.63	32.3	3.1	54.08	24.8	3.0	54.48	15.8	3.9	2.44	6.6
4.2	60.34	32.1	4.1	53.92	24.6	4.0	54.58	15.4	4.9	2.85	6.3
5.2	60.04	32.0	5.1	53.78	24.3	5.0	54.71	15.1	5.9	3.26	6.1
6.2	59.72	31.8	6.1	53.65	23.9	6.0	54.88	14.7	6.9	3.67	5.9
7.1	59.38	31.6	7.1	53.56	23.6	7.0	55.08	14.4	7.9	4.06	5.7
8.1	59.04	31.4	8.1	53.50	23.3	8.0	55.29	14.1	8.9	4.43	5.5
9.1	58.71	31.2	9.1	53.47	23.0	9.0	55.52	13.8	9.9	4.77	5.3
10.1	58.40	30.9	10.1	53.47	22.6	10.0	55.75	13.5	10.9	5.11	5.1
11.1	58.11	30.7	11.1	53.49	22.3	11.0	55.97	13.2	11.9	5.44	4.8
12.1	57.87	30.4	12.1	53.51	22.0	12.0	56.17	13.0	12.9	5.79	4.6
13.1	57.65	30.2	13.0	53.52	21.8	13.0	56.37	12.7	13.9	6.16	4.4
14.1	57.45	29.9	14.0	53.52	21.5	14.0	56.53	12.5	14.9	6.55	4.1
15.1	57.27	29.7	15.0	53.51	21.2	15.0	56.70	12.2	15.9	6.98	3.8
16.1	57.09	29.5	16.0	53.48	21.0	16.0	56.87	11.9	16.9	7.43	3.6
17.1	56.89	29.3	17.0	53.44	20.7	17.0	57.07	11.6	17.9	7.91	3.4
18.1	56.69	29.0	18.0	53.40	20.4	18.0	57.28	11.3	18.9	8.39	3.2
19.1	56.46	28.8	19.0	53.36	20.1	18.9	57.53	10.9	19.9	8.87	3.0
20.1	56.22	28.6	20.0	53.35	19.7	19.9	57.80	10.6	20.9	9.35	2.8
21.1	55.97	28.4	21.0	53.38	19.4	20.9	58.10	10.3	21.9	9.81	2.7
22.1	55.72	28.1	22.0	53.43	19.1	21.9	58.43	10.0	22.9	10.24	2.5
23.1	55.49	27.8	23.0	53.52	18.7	22.9	58.76	9.7	23.9	10.65	2.3
24.1	55.27	27.5	24.0	53.63	18.4	23.9	59.08	9.5	24.8	11.05	2.2
25.1	55.10	27.2	25.0	53.75	18.1	24.9	59.39	9.3	25.8	11.46	2.0
26.1	54.95	26.9	26.0	53.88	17.8	25.9	59.68	9.0	26.8	11.87	1.8
27.1	54.83	26.6	27.0	54.01	17.5	26.9	59.95	8.8	27.8	12.31	1.6
28.1	54.74	26.4	28.0	54.12	17.2	27.9	60.22	8.5	28.8	12.78	1.4
29.1	54.65	26.1	29.0	54.20	17.0	28.9	60.47	8.3	29.8	13.28	1.2
30.1	54.57	25.8	30.0	54.28	16.7	29.9	60.74	8.0	30.8	13.80	1.0
31.1	54.48	25.6	31.0	54.34	16.4	30.9	61.02	7.7	31.8	14.33	0.8
32.1	54.36	25.3	32.0	54.40	16.1	31.9	61.33	7.4	32.8	14.87	0.7

APPARENT PLACES OF *a* URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 11	° ′ 88 37		h m 1 11	° ′ 88 37		h m 1 12	° ′ 88 37		h m 1 12	° ′ 88 37
	s	″		s	″		s	″		s	″
1.9	16.76	49.1	1.9	35.80	43.2	1.8	1.45	41.9	1.7	28.95	45.7
2.9	17.13	48.9	2.8	36.49	43.1	2.8	2.38	41.9	2.7	29.87	45.9
3.9	17.49	48.7	3.8	37.22	42.9	3.8	3.35	41.9	3.7	30.76	46.1
4.9	17.84	48.4	4.8	38.02	42.8	4.8	4.36	42.0	4.7	31.61	46.4
5.9	18.21	48.2	5.8	38.86	42.6	5.8	5.37	42.0	5.7	32.40	46.6
6.9	18.62	47.9	6.8	39.77	42.5	6.8	6.38	42.1	6.7	33.13	46.9
7.9	19.09	47.6	7.8	40.69	42.4	7.8	7.35	42.2	7.7	33.83	47.1
8.9	19.64	47.4	8.8	41.63	42.3	8.7	8.28	42.3	8.7	34.50	47.3
9.9	20.24	47.1	9.8	42.55	42.3	9.7	9.14	42.4	9.7	35.16	47.6
10.9	20.89	46.9	10.8	43.44	42.2	10.7	9.97	42.6	10.7	35.86	47.8
11.9	21.56	46.6	11.8	44.28	42.2	11.7	10.76	42.7	11.7	36.58	48.0
12.9	22.24	46.4	12.8	45.07	42.2	12.7	11.54	42.8	12.7	37.35	48.2
13.9	22.91	46.3	13.8	45.83	42.1	13.7	12.35	42.8	13.7	38.16	48.4
14.9	23.54	46.1	14.8	46.58	42.1	14.7	13.19	42.9	14.6	39.00	48.7
15.9	24.12	45.9	15.8	47.33	42.0	15.7	14.07	43.0	15.6	39.84	48.9
16.9	24.69	45.7	16.8	48.11	42.0	16.7	14.99	43.1	16.6	40.67	49.2
17.9	25.23	45.6	17.8	48.94	41.9	17.7	15.96	43.2	17.6	41.46	49.5
18.9	25.77	45.4	18.8	49.81	41.8	18.7	16.95	43.3	18.6	42.20	49.8
19.9	26.32	45.2	19.8	50.75	41.7	19.7	17.94	43.4	19.6	42.87	50.1
20.9	26.93	45.0	20.8	51.72	41.7	20.7	18.91	43.6	20.6	43.48	50.4
21.9	27.58	44.7	21.8	52.73	41.7	21.7	19.84	43.8	21.6	44.05	50.7
22.9	28.29	44.5	22.8	53.73	41.7	22.7	20.71	44.0	22.6	44.60	51.0
23.9	29.06	44.3	23.8	54.70	41.7	23.7	21.54	44.2	23.6	45.17	51.3
24.9	29.86	44.2	24.8	55.64	41.8	24.7	22.31	44.3	24.6	45.75	51.6
25.9	30.69	44.0	25.8	56.52	41.8	25.7	23.06	44.5	25.6	46.38	51.8
26.9	31.52	43.9	26.8	57.36	41.8	26.7	23.80	44.7	26.6	47.06	52.1
27.9	32.32	43.8	27.8	58.16	41.9	27.7	24.56	44.8	27.6	47.77	52.4
28.9	33.08	43.7	28.8	58.95	41.9	28.7	25.36	45.0	28.6	48.49	52.7
29.9	33.79	43.6	29.8	59.75	41.9	29.7	26.20	45.1	29.6	49.21	53.0
30.9	34.47	43.4	30.8	60.58	41.9	30.7	27.08	45.3	30.6	49.90	53.3
31.9	35.13	43.3	31.8	61.45	41.9	31.7	28.01	45.5	31.6	50.53	53.7
32.9	35.80	43.2	32.8	62.38	41.9	32.7	28.95	45.7	32.6	51.12	54.0

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 12	° ′ 88 37		h m 1 13	° ′ 88 38		h m 1 12	° ′ 88 38		h m 1 12	° ′ 88 38
	s	″		s	″		s	″		s	″
1.6	51.12	54.0	1.5	2.92	4.9	1.4	62.54	16.8	1.3	49.72	26.7
2.6	51.65	54.4	2.5	3.01	5.3	2.4	62.31	17.1	2.3	49.19	26.9
3.6	52.12	54.7	3.5	3.09	5.6	3.4	62.13	17.4	3.3	48.65	27.2
4.6	52.55	55.1	4.5	3.21	6.0	4.4	61.96	17.8	4.3	48.08	27.5
5.6	52.97	55.4	5.5	3.34	6.3	5.4	61.81	18.2	5.3	47.47	27.8
6.6	53.40	55.7	6.5	3.52	6.7	6.4	61.62	18.5	6.3	46.79	28.1
7.6	53.86	56.0	7.5	3.74	7.0	7.4	61.40	18.9	7.3	46.05	28.4
8.6	54.36	56.3	8.5	3.96	7.4	8.4	61.12	19.3	8.3	45.25	28.7
9.6	54.89	56.6	9.5	4.18	7.8	9.4	60.77	19.7	9.3	44.42	28.9
10.6	55.46	57.0	10.5	4.38	8.2	10.4	60.37	20.1	10.3	43.59	29.1
11.6	56.02	57.3	11.5	4.53	8.6	11.4	59.91	20.5	11.3	42.77	29.3
12.6	56.58	57.7	12.5	4.62	9.1	12.4	59.43	20.8	12.3	41.99	29.5
13.6	57.11	58.0	13.5	4.64	9.5	13.4	58.93	21.2	13.3	41.23	29.7
14.6	57.59	58.4	14.5	4.60	9.9	14.4	58.45	21.5	14.3	40.51	29.9
15.6	58.02	58.8	15.5	4.51	10.3	15.4	58.01	21.8	15.3	39.84	30.1
16.6	58.38	59.2	16.5	4.41	10.7	16.4	57.61	22.1	16.3	39.17	30.3
17.6	58.69	59.6	17.5	4.32	11.1	17.4	57.24	22.4	17.3	38.48	30.5
18.6	58.97	60.0	18.5	4.25	11.4	18.4	56.89	22.7	18.3	37.77	30.7
19.6	59.23	60.3	19.5	4.22	11.8	19.4	56.53	23.0	19.3	37.01	31.0
20.5	59.51	60.7	20.5	4.21	12.1	20.4	56.15	23.4	20.3	36.17	31.2
21.5	59.82	61.0	21.5	4.25	12.5	21.4	55.73	23.7	21.3	35.31	31.4
22.5	60.18	61.3	22.5	4.28	12.9	22.4	55.24	24.1	22.3	34.40	31.6
23.5	60.57	61.7	23.5	4.30	13.3	23.4	54.68	24.4	23.3	33.46	31.7
24.5	60.98	62.0	24.5	4.29	13.7	24.4	54.07	24.8	24.3	32.51	31.9
25.5	61.39	62.4	25.5	4.23	14.1	25.4	53.42	25.1	25.3	31.59	32.0
26.5	61.78	62.8	26.4	4.10	14.5	26.4	52.75	25.4	26.3	30.70	32.1
27.5	62.13	63.2	27.4	3.91	14.9	27.4	52.09	25.7	27.3	29.86	32.2
28.5	62.42	63.6	28.4	3.66	15.3	28.4	51.44	25.9	28.3	29.06	32.3
29.5	62.63	64.1	29.4	3.38	15.7	29.4	50.83	26.2	29.3	28.29	32.5
30.5	62.80	64.5	30.4	3.08	16.1	30.4	50.25	26.4	30.3	27.52	32.6
31.5	62.92	64.9	31.4	2.80	16.4	31.3	49.72	26.7	31.3	26.74	32.7
32.5	63.01	65.3	32.4	2.54	16.8	32.3	49.19	26.9	32.3	25.92	32.9

APPARENT PLACES OF 51 CEPHEI, (*Hev.,*) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14		h m 6 40	° ′ 87 14
	s	″		s	″		s	″		s	″
0.5	34.53	16.4	1.4	33.06	26.7	1.3	25.14	33.3	1.2	12.49	35.6
1.5	34.65	16.7	2.4	32.81	27.0	2.3	24.73	33.4	2.2	12.10	35.6
2.5	34.72	17.1	3.4	32.57	27.2	3.3	24.33	33.6	3.2	11.72	35.5
3.5	34.76	17.5	4.4	32.35	27.5	4.3	23.95	33.7	4.2	11.37	35.5
4.5	34.78	17.8	5.4	32.14	27.7	5.3	23.59	33.8	5.2	11.00	35.5
5.5	34.78	18.1	6.4	31.96	28.0	6.3	23.25	33.9	6.2	10.63	35.5
6.5	34.79	18.5	7.4	31.79	28.2	7.3	22.92	34.0	7.2	10.23	35.5
7.5	34.79	18.8	8.4	31.61	28.5	8.3	22.59	34.2	8.2	9.80	35.5
8.5	34.83	19.0	9.4	31.42	28.8	9.3	22.23	34.3	9.2	9.35	35.4
9.5	34.87	19.3	10.4	31.21	29.1	10.3	21.85	34.5	10.2	8.88	35.4
10.5	34.93	19.6	11.4	30.97	29.4	11.3	21.45	34.7	11.2	8.43	35.3
11.5	35.00	20.0	12.4	30.69	29.6	12.3	21.02	34.8	12.2	7.98	35.2
12.5	35.05	20.3	13.4	30.39	29.9	13.3	20.58	34.9	13.2	7.55	35.1
13.5	35.09	20.6	14.4	30.06	30.2	14.3	20.11	35.0	14.2	7.16	35.0
14.5	35.09	21.0	15.4	29.72	30.4	15.3	19.65	35.1	15.2	6.79	34.8
15.5	35.06	21.4	16.4	29.38	30.7	16.3	19.20	35.2	16.2	6.44	34.7
16.4	35.00	21.7	17.4	29.05	30.8	17.3	18.77	35.2	17.2	6.11	34.6
17.4	34.91	22.1	18.4	28.74	31.0	18.3	18.36	35.2	18.2	5.79	34.5
18.4	34.79	22.4	19.4	28.45	31.2	19.3	17.98	35.3	19.2	5.46	34.4
19.4	34.68	22.7	20.4	28.18	31.4	20.3	17.61	35.3	20.2	5.11	34.3
20.4	34.56	23.0	21.4	27.91	31.6	21.3	17.25	35.4	21.2	4.74	34.2
21.4	34.46	23.3	22.4	27.65	31.8	22.3	16.88	35.4	22.2	4.35	34.1
22.4	34.37	23.6	23.3	27.37	32.0	23.3	16.50	35.5	23.2	3.94	34.0
23.4	34.29	23.9	24.3	27.06	32.3	24.3	16.10	35.6	24.2	3.53	33.9
24.4	34.21	24.1	25.3	26.72	32.5	25.3	15.67	35.7	25.2	3.12	33.7
25.4	34.15	24.4	26.3	26.36	32.7	26.3	15.21	35.7	26.2	2.73	33.6
26.4	34.07	24.8	27.3	25.96	32.9	27.3	14.73	35.8	27.2	2.37	33.4
27.4	33.97	25.1	28.3	25.56	33.1	28.3	14.25	35.8	28.2	2.03	33.2
28.4	33.85	25.4	29.3	25.14	33.3	29.3	13.78	35.8	29.2	1.72	33.0
29.4	33.70	25.8	30.3	24.73	33.4	30.3	13.33	35.7	30.2	1.43	32.8
30.4	33.51	26.1	31.3	24.33	33.6	31.2	12.89	35.7	31.2	1.16	32.6
31.4	33.29	26.4	32.3	23.95	33.7	32.2	12.49	35.6	32.2	0.89	32.4

APPARENT PLACES OF 51 CEPHEI, (*Hev,*) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 39	° ′ 87 14		h m 6 39	° ′ 87 14		h m 6 39	° ′ 87 14		h m 6 40	° ′ 87 14
	s	″		s	″		s	″		s	″
1.2	61.16	32.6	1.1	54.36	25.3	1.0	54.34	16.4	1.9	1.67	7.1
2.2	60.89	32.4	2.1	54.23	25.1	2.0	54.40	16.1	2.9	2.04	6.8
3.2	60.63	32.3	3.1	54.08	24.8	3.0	54.48	15.8	3.9	2.44	6.6
4.2	60.34	32.1	4.1	53.92	24.6	4.0	54.58	15.4	4.9	2.85	6.3
5.2	60.04	32.0	5.1	53.78	24.3	5.0	54.71	15.1	5.9	3.26	6.1
6.2	59.72	31.8	6.1	53.65	23.9	6.0	54.88	14.7	6.9	3.67	5.9
7.1	59.38	31.6	7.1	53.56	23.6	7.0	55.08	14.4	7.9	4.06	5.7
8.1	59.04	31.4	8.1	53.50	23.3	8.0	55.29	14.1	8.9	4.43	5.5
9.1	58.71	31.2	9.1	53.47	23.0	9.0	55.52	13.8	9.9	4.77	5.3
10.1	58.40	30.9	10.1	53.47	22.6	10.0	55.75	13.5	10.9	5.11	5.1
11.1	58.11	30.7	11.1	53.49	22.3	11.0	55.97	13.2	11.9	5.44	4.8
12.1	57.87	30.4	12.1	53.51	22.0	12.0	56.17	13.0	12.9	5.79	4.6
13.1	57.65	30.2	13.0	53.52	21.8	13.0	56.37	12.7	13.9	6.16	4.4
14.1	57.45	29.9	14.0	53.52	21.5	14.0	56.53	12.5	14.9	6.55	4.1
15.1	57.27	29.7	15.0	53.51	21.2	15.0	56.70	12.2	15.9	6.98	3.8
16.1	57.09	29.5	16.0	53.48	21.0	16.0	56.87	11.9	16.9	7.43	3.6
17.1	56.89	29.3	17.0	53.44	20.7	17.0	57.07	11.6	17.9	7.91	3.4
18.1	56.69	29.0	18.0	53.40	20.4	18.0	57.28	11.3	18.9	8.39	3.2
19.1	56.46	28.8	19.0	53.36	20.1	18.9	57.53	10.9	19.9	8.87	3.0
20.1	56.22	28.6	20.0	53.35	19.7	19.9	57.80	10.6	20.9	9.35	2.8
21.1	55.97	28.4	21.0	53.38	19.4	20.9	58.10	10.3	21.9	9.81	2.7
22.1	55.72	28.1	22.0	53.43	19.1	21.9	58.43	10.0	22.9	10.24	2.5
23.1	55.49	27.8	23.0	53.52	18.7	22.9	58.76	9.7	23.9	10.65	2.3
24.1	55.27	27.5	24.0	53.63	18.4	23.9	59.08	9.5	24.8	11.05	2.2
25.1	55.10	27.2	25.0	53.75	18.1	24.9	59.39	9.3	25.8	11.46	2.0
26.1	54.95	26.9	26.0	53.88	17.8	25.9	59.68	9.0	26.8	11.87	1.8
27.1	54.83	26.6	27.0	54.01	17.5	26.9	59.95	8.8	27.8	12.31	1.6
28.1	54.74	26.4	28.0	54.12	17.2	27.9	60.22	8.5	28.8	12.78	1.4
29.1	54.65	26.1	29.0	54.20	17.0	28.9	60.47	8.3	29.8	13.28	1.2
30.1	54.57	25.8	30.0	54.28	16.7	29.9	60.74	8.0	30.8	13.80	1.0
31.1	54.48	25.6	31.0	54.34	16.4	30.9	61.02	7.7	31.8	14.33	0.8
32.1	54.36	25.3	32.0	54.40	16.1	31.9	61.33	7.4	32.8	14.87	0.7

APPARENT PLACES OF 51 CEPHEI, (*Hev.*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 40	° ′ 87 13		h m 6 40	° ′ 87 13		h m 6 40	° ′ 87 14		h m 6 41	° ′ 87 14
	s	″		s	″		s	″		s	″
1.8	14.87	60.7	1.7	30.74	58.2	1.7	47.23	0.0	1.6	0.26	5.9
2.8	15.41	60.6	2.7	31.28	58.2	2.7	47.67	0.1	2.6	0.61	6.1
3.8	15.92	60.5	3.7	31.79	58.2	3.7	48.13	0.2	3.6	0.97	6.3
4.8	16.42	60.4	4.7	32.29	58.2	4.7	48.61	0.3	4.6	1.34	6.6
5.8	16.90	60.3	5.7	32.78	58.2	5.6	49.10	0.4	5.6	1.72	6.8
6.8	17.35	60.1	6.7	33.29	58.2	6.6	49.63	0.6	6.6	2.10	7.1
7.8	17.81	60.0	7.7	33.80	58.2	7.6	50.17	0.7	7.6	2.45	7.4
8.8	18.26	59.9	8.7	34.35	58.1	8.6	50.70	0.9	8.6	2.78	7.7
9.8	18.73	59.7	9.7	34.91	58.1	9.6	51.23	1.0	9.6	3.08	8.0
10.8	19.23	59.6	10.7	35.49	58.1	10.6	51.74	1.2	10.6	3.34	8.4
11.8	19.75	59.4	11.7	36.10	58.1	11.6	52.23	1.5	11.6	3.58	8.7
12.8	20.30	59.3	12.7	36.70	58.2	12.6	53.67	1.7	12.5	3.80	9.0
13.8	20.86	59.2	13.7	37.29	58.2	13.6	53.10	1.9	13.5	4.02	9.3
14.8	21.45	59.1	14.7	37.86	58.3	14.6	53.51	2.1	14.5	4.24	9.5
15.8	22.03	59.0	15.7	38.40	58.4	15.6	53.90	2.3	15.5	4.47	9.8
16.8	22.61	58.9	16.7	38.93	58.5	16.6	54.29	2.5	16.5	4.71	10.0
17.8	23.15	58.9	17.7	39.43	58.6	17.6	54.69	2.6	17.5	4.97	10.3
18.8	23.68	58.8	18.7	39.91	58.6	18.6	55.12	2.8	18.5	5.25	10.6
19.8	24.18	58.8	19.7	40.40	58.7	19.6	55.57	3.0	19.5	5.53	10.9
20.8	24.67	58.7	20.7	40.88	58.7	20.6	56.03	3.2	20.5	5.79	11.2
21.8	25.14	58.7	21.7	41.40	58.8	21.6	56.50	3.4	21.5	6.03	11.6
22.8	25.63	58.6	22.7	41.93	58.8	22.6	56.97	3.6	22.5	6.24	11.9
23.8	26.13	58.5	23.7	42.48	58.9	23.6	57.43	3.8	23.5	6.41	12.3
24.8	26.65	58.4	24.7	43.06	58.9	24.6	57.87	4.1	24.5	6.55	12.6
25.8	27.21	58.3	25.7	43.64	59.0	25.6	58.26	4.4	25.5	6.67	13.0
26.8	27.78	58.3	26.7	44.22	59.1	26.6	58.64	4.7	26.5	6.77	13.3
27.8	28.38	58.2	27.7	44.78	59.3	27.6	58.97	4.9	27.5	6.87	13.6
28.8	28.99	58.2	28.7	45.32	59.4	28.6	59.30	5.2	28.5	6.98	13.9
29.8	29.59	58.1	29.7	45.83	59.6	29.6	59.61	5.4	29.5	7.08	14.2
30.7	30.17	58.2	30.7	46.31	59.7	30.6	59.93	5.7	30.5	7.22	14.4
31.7	30.74	58.2	31.7	46.77	59.9	31.6	60.26	5.9	31.5	7.36	14.7
32.7	31.28	58.2	32.7	47.23	60.0	32.6	60.61	6.1	32.5	7.52	15.0

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36
	s	″		s	″		s	″		s	″
1.0	0.54	18.1	1.9	3.85	7.7	1.8	11.60	1.7	1.7	22.46	0.5
2.0	0.54	17.7	2.9	4.09	7.4	2.8	11.95	1.6	2.7	22.78	0.6
3.0	0.56	17.3	3.9	4.33	7.2	3.8	12.29	1.5	3.7	23.09	0.7
4.0	0.59	17.0	4.9	4.55	6.9	4.8	12.62	1.4	4.7	23.40	0.7
5.0	0.63	16.6	5.9	4.76	6.7	5.8	12.94	1.3	5.7	23.71	0.8
6.0	0.69	16.3	6.9	4.96	6.5	6.8	13.24	1.2	6.7	24.04	0.8
7.0	0.74	16.0	7.9	5.17	6.2	7.8	13.55	1.1	7.7	24.39	0.9
8.0	0.78	15.7	8.9	5.37	5.9	8.8	13.86	1.0	8.7	24.75	0.9
9.0	0.81	15.4	9.9	5.60	5.7	9.8	14.19	0.8	9.7	25.11	1.0
10.0	0.84	15.1	10.9	5.83	5.4	10.8	14.53	0.7	10.7	25.48	1.1
11.0	0.87	14.7	11.9	6.09	5.1	11.8	14.89	0.6	11.7	25.83	1.2
11.9	0.89	14.4	12.9	6.37	4.8	12.8	15.28	0.5	12.7	26.17	1.4
12.9	0.93	14.0	13.9	6.67	4.6	13.8	15.66	0.4	13.7	26.50	1.6
13.9	0.99	13.7	14.9	6.98	4.4	14.8	16.05	0.4	14.7	26.81	1.7
14.9	1.06	13.3	15.9	7.29	4.2	15.8	16.44	0.3	15.7	27.11	1.9
15.9	1.16	12.9	16.9	7.60	4.0	16.8	16.82	0.3	16.7	27.39	2.1
16.9	1.28	12.6	17.8	7.90	3.8	17.8	17.18	0.3	17.7	27.66	2.2
17.9	1.43	12.2	18.8	8.18	3.6	18.8	17.52	0.3	18.7	27.93	2.3
18.9	1.57	11.9	19.8	8.45	3.5	19.8	17.86	0.3	19.7	28.21	2.5
19.9	1.72	11.6	20.8	8.72	3.3	20.8	18.17	0.3	20.7	28.50	2.6
20.9	1.87	11.3	21.8	8.99	3.1	21.8	18.50	0.3	21.7	28.80	2.7
21.9	2.01	11.0	22.8	9.26	2.9	22.8	18.83	0.2	22.7	29.12	2.8
22.9	2.14	10.8	23.8	9.55	2.7	23.8	19.16	0.2	23.7	29.44	3.0
23.9	2.26	10.5	24.8	9.85	2.5	24.8	19.51	0.2	24.7	29.76	3.2
24.9	2.38	10.2	25.8	10.18	2.3	25.7	19.88	0.1	25.7	30.07	3.4
25.9	2.50	9.9	26.8	10.52	2.1	26.7	20.27	0.1	26.7	30.36	3.6
26.9	2.64	9.5	27.8	10.87	1.9	27.7	20.66	0.2	27.7	30.63	3.9
27.9	2.79	9.2	28.8	11.24	1.8	28.7	21.04	0.2	28.7	30.89	4.1
28.9	2.97	8.9	29.8	11.60	1.7	29.7	21.42	0.3	29.7	31.12	4.3
29.9	3.17	8.5	30.8	11.95	1.6	30.7	21.78	0.3	30.7	31.33	4.6
30.9	3.38	8.2	31.8	12.29	1.5	31.7	22.12	0.4	31.6	31.55	4.8
31.9	3.62	7.9	32.8	12.62	1.4	32.7	22.46	0.5	32.6	31.76	5.0

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36		h m 18 13	° ′ 86 36
	s	″		s	″		s	″		s	″
1.6	31.55	4.8	1.6	36.57	13.0	1.5	35.91	22.3	1.4	29.51	31.0
2.6	31.76	5.0	2.6	36.66	13.2	2.5	35.81	22.6	2.4	29.19	31.3
3.6	31.98	5.1	3.6	36.77	13.5	3.5	35.71	23.0	3.4	28.87	31.6
4.6	32.22	5.3	4.6	36.86	13.9	4.5	35.58	23.3	4.4	28.53	31.8
5.6	32.47	5.5	5.6	36.94	14.2	5.5	35.43	23.6	5.4	28.19	32.0
6.6	32.72	5.7	6.6	37.00	14.5	6.5	35.26	24.0	6.4	27.85	32.2
7.6	32.97	6.0	7.5	37.05	14.9	7.5	35.08	24.3	7.4	27.52	32.4
8.6	33.23	6.2	8.5	37.07	15.2	8.5	34.90	24.6	8.4	27.20	32.6
9.6	33.46	6.5	9.5	37.06	15.6	9.5	34.70	24.9	9.4	26.90	32.7
10.6	33.68	6.8	10.5	37.05	15.9	10.5	34.51	25.2	10.4	26.60	32.9
11.6	33.88	7.1	11.5	37.02	16.2	11.5	34.32	25.4	11.4	26.31	33.1
12.6	34.05	7.4	12.5	36.99	16.5	12.5	34.15	25.7	12.4	26.00	33.3
13.6	34.21	7.6	13.5	36.97	16.8	13.4	33.98	25.9	13.4	25.69	33.6
14.6	34.36	7.9	14.5	36.96	17.0	14.4	33.82	26.2	14.4	25.36	33.8
15.6	34.51	8.2	15.5	36.97	17.3	15.4	33.66	26.5	15.4	25.00	34.0
16.6	34.65	8.4	16.5	36.97	17.6	16.4	33.48	26.8	16.4	24.64	34.2
17.6	34.81	8.6	17.5	36.98	17.9	17.4	33.29	27.1	17.4	24.26	34.5
18.6	34.98	8.9	18.5	36.97	18.2	18.4	33.08	27.4	18.4	23.86	34.6
19.6	35.15	9.1	19.5	36.96	18.6	19.4	32.85	27.7	19.3	23.47	34.8
20.6	35.33	9.4	20.5	36.93	18.9	20.4	32.60	28.0	20.3	23.07	34.9
21.6	35.50	9.7	21.5	36.87	19.3	21.4	32.33	28.3	21.3	22.69	35.0
22.6	35.68	10.0	22.5	36.79	19.6	22.4	32.06	28.6	22.3	22.33	35.2
23.6	35.83	10.3	23.5	36.69	20.0	23.4	31.79	28.8	23.3	21.97	35.3
24.6	35.96	10.6	24.5	36.58	20.3	24.4	31.52	29.0	24.3	21.62	35.4
25.6	36.07	10.9	25.5	36.46	20.6	25.4	31.26	29.3	25.3	21.28	35.6
26.6	36.16	11.3	26.5	36.35	20.9	26.4	31.01	29.5	26.3	20.92	35.7
27.6	36.24	11.6	27.5	36.24	21.2	27.4	30.78	29.7	27.3	20.55	35.9
28.6	36.30	11.9	28.5	36.15	21.4	28.4	30.54	29.9	28.3	20.17	36.1
29.6	36.36	12.2	29.5	36.07	21.7	29.4	30.31	30.2	29.3	19.77	36.3
30.6	36.42	12.4	30.5	35.99	22.0	30.4	30.06	30.5	30.3	19.35	36.4
31.6	36.49	12.7	31.5	35.91	22.3	31.4	29.80	30.7	31.3	18.92	36.6
32.6	36.57	13.0	32.5	35.81	22.6	32.4	29.51	31.0	32.3	18.48	36.7

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 13	° ′ 86 36		h m 18 12	° ′ 86 36		h m 18 12	° ′ 86 36		h m 18 12	° ′ 86 36
	s	″		s	″		s	″		s	″
1.3	18.48	36.7	1.2	65.66	38.0	1.1	52.93	34.6	1.1	43.68	27.3
2.3	18.05	36.8	2.2	65.24	37.9	2.1	52.58	34.4	2.1	43.46	27.0
3.3	17.62	36.8	3.2	64.82	37.8	3.1	52.24	34.3	3.1	43.23	26.8
4.3	17.20	36.9	4.2	64.42	37.8	4.1	51.89	34.1	4.1	42.99	26.5
5.3	16.80	37.0	5.2	64.01	37.7	5.1	51.53	33.9	5.1	42.74	26.2
6.3	16.42	37.0	6.2	63.62	37.7	6.1	51.15	33.8	6.1	42.51	25.9
7.3	16.04	37.1	7.2	63.21	37.7	7.1	50.76	33.6	7.0	42.29	25.5
8.3	15.66	37.2	8.2	62.79	37.6	8.1	50.38	33.4	8.0	42.08	25.2
9.3	15.27	37.3	9.2	62.35	37.6	9.1	49.99	33.2	9.0	41.88	24.8
10.3	14.87	37.4	10.2	61.90	37.6	10.1	49.63	32.9	10.0	41.71	24.5
11.3	14.45	37.5	11.2	61.45	37.5	11.1	49.27	32.6	11.0	41.57	24.1
12.3	14.02	37.6	12.2	60.99	37.4	12.1	48.93	32.4	12.0	41.43	23.8
13.3	13.57	37.7	13.2	60.54	37.3	13.1	48.62	31.1	13.0	41.31	23.5
14.3	13.11	37.8	14.2	60.10	37.2	14.1	48.32	31.9	14.0	41.19	23.2
15.3	12.65	37.8	15.2	59.67	37.1	15.1	48.04	31.6	15.0	41.07	22.9
16.3	12.19	37.9	16.2	59.26	36.9	16.1	47.75	31.4	16.0	40.94	22.6
17.3	11.74	37.9	17.2	58.86	36.8	17.1	47.47	31.2	17.0	40.79	22.3
18.3	11.31	37.9	18.2	58.48	36.7	18.1	47.17	30.9	18.0	40.65	22.0
19.3	10.90	37.9	19.2	58.10	36.5	19.1	46.86	30.7	19.0	40.50	21.6
20.3	10.49	37.9	20.2	57.72	36.4	20.1	46.55	30.5	20.0	40.36	21.3
21.3	10.09	37.9	21.2	57.33	36.4	21.1	46.23	30.3	21.0	40.23	20.9
22.3	9.70	37.9	22.2	56.93	36.3	22.1	45.92	30.0	22.0	40.12	20.5
23.3	9.28	38.0	23.2	56.52	36.2	23.1	45.60	29.7	23.0	40.03	20.2
24.3	8.87	38.0	24.2	56.09	36.1	24.1	45.30	29.4	24.0	39.97	19.8
25.2	8.43	38.1	25.2	55.66	35.9	25.1	45.02	29.1	25.0	39.93	19.4
26.2	7.98	38.1	26.2	55.22	35.8	26.1	44.77	28.8	26.0	39.91	19.1
27.2	7.51	38.1	27.2	54.80	35.6	27.1	44.53	28.4	27.0	39.88	18.7
28.2	7.04	38.1	28.2	54.39	35.4	28.1	44.31	28.1	28.0	39.86	18.4
29.2	6.57	38.1	29.2	54.00	35.2	29.1	44.10	27.9	29.0	39.83	18.1
30.2	6.11	38.0	30.2	53.63	35.0	30.1	43.89	27.6	30.0	39.78	17.8
31.2	5.66	38.0	31.2	53.27	34.8	31.1	43.68	27.3	31.0	39.74	17.5
32.2	5.24	37.9	32.1	52.93	34.6	32.1	43.46	27.0	32.0	39.69	17.2

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	h m 19 50	° ′ 88 55		h m 19 50	° ′ 88 55		h m 19 50	° ′ 88 55		h m 19 50	° ′ 88 55
	s	″		s	″		s	″		s	″
0.1	20.08	32.6	1.0	13.09	22.0	1.9	26.62	13.6	1.8	55.69	8.6
1.1	19.42	32.2	2.0	13.37	21.7	2.9	27.48	13.3	2.8	56.68	8.6
2.1	18.84	31.9	3.0	13.69	21.4	3.9	28.32	13.1	3.8	57.64	8.5
3.1	18.33	31.5	4.0	14.00	21.1	4.9	29.12	12.9	4.8	58.58	8.5
4.1	17.90	31.2	5.0	14.29	20.8	5.9	29.89	12.8	5.8	59.53	8.4
5.0	17.52	30.9	6.0	14.54	20.5	6.9	30.61	12.6	6.8	60.51	8.3
6.0	17.19	30.6	7.0	14.75	20.3	7.9	31.32	12.4	7.8	61.56	8.3
7.0	16.87	30.3	8.0	14.95	20.0	8.9	32.03	12.1	8.8	62.66	8.2
8.0	16.54	30.0	8.9	15.14	19.7	9.9	32.77	11.9	9.8	63.82	8.1
9.0	16.17	29.7	9.9	15.36	19.3	10.9	33.55	11.7	10.8	65.03	8.1
10.0	15.78	29.4	10.9	15.62	19.0	11.9	34.41	11.4	11.8	66.25	8.1
11.0	15.35	29.1	11.9	15.95	18.7	12.9	35.34	11.2	12.8	67.44	8.1
12.0	14.92	28.8	12.9	16.36	18.3	13.9	36.34	11.0	13.8	68.60	8.1
13.0	14.49	28.5	13.9	16.86	18.0	14.9	37.37	10.8	14.8	69.71	8.2
14.0	14.09	28.1	14.9	17.41	17.7	15.9	38.41	10.6	15.8	70.76	8.2
15.0	13.75	27.8	15.9	18.01	17.4	16.8	39.47	10.5	16.8	71.76	8.3
16.0	13.49	27.4	16.9	18.62	17.1	17.8	40.48	10.4	17.8	72.72	8.3
17.0	13.31	27.0	17.9	19.21	16.8	18.8	41.45	10.3	18.8	73.68	8.3
18.0	13.20	26.7	18.9	19.77	16.6	19.8	42.36	10.1	19.8	74.63	8.3
19.0	13.16	26.3	19.9	20.30	16.3	20.8	43.23	10.0	20.8	75.63	8.3
20.0	13.15	26.0	20.9	20.80	16.1	21.8	44.09	9.9	21.7	76.68	8.3
21.0	13.14	25.7	21.9	21.28	15.8	22.8	44.97	9.7	22.7	77.78	8.3
22.0	13.12	25.4	22.9	21.76	15.5	23.8	45.87	9.6	23.7	78.92	8.4
23.0	13.07	25.1	23.9	22.27	15.3	24.8	46.82	9.4	24.7	80.09	8.4
24.0	12.98	24.8	24.9	22.83	14.9	25.8	47.85	9.2	25.7	81.25	8.5
25.0	12.87	24.5	25.9	23.46	14.6	26.8	48.94	9.1	26.7	82.40	8.6
26.0	12.75	24.2	26.9	24.16	14.4	27.8	50.07	9.0	27.7	83.50	8.7
27.0	12.64	23.9	27.9	24.93	14.1	28.8	51.24	8.8	28.7	84.54	8.8
28.0	12.58	23.5	28.9	25.76	13.8	29.8	52.40	8.8	29.7	85.51	9.0
29.0	12.59	23.1	29.9	26.62	13.6	30.8	53.55	8.7	30.7	86.43	9.1
30.0	12.68	22.8	30.9	27.48	13.3	31.8	54.64	8.7	31.7	87.31	9.2
31.0	12.85	22.4	31.9	28.32	13.1	32.8	55.69	8.6	32.7	88.18	9.3

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 19 51	° ′ 88 55		h m 19 51	° ′ 88 55		h m 19 51	° ′ 88 55		h m 19 51	° ′ 88 55
	s	″		s	″		s	″		s	″
1.7	27.31	9.2	1.6	52.83	14.8	1.6	63.72	23.6	1.5	57.31	33.9
2.7	28.18	9.3	2.6	53.47	15.0	2.6	63.91	23.9	2.5	56.79	34.2
3.7	29.06	9.4	3.6	54.14	15.3	3.6	64.07	24.2	3.5	56.20	34.6
4.7	29.99	9.5	4.6	54.84	15.5	4.6	64.19	24.6	4.5	55.54	34.9
5.7	30.97	9.5	5.6	55.53	15.8	5.5	64.24	25.0	5.5	54.84	35.3
6.7	32.00	9.6	6.6	56.19	16.1	6.5	64.21	25.3	6.5	54.13	35.6
7.7	33.06	9.8	7.6	56.79	16.4	7.5	64.11	25.7	7.5	53.43	35.8
8.7	34.12	9.9	8.6	57.32	16.7	8.5	63.95	26.0	8.5	52.75	36.1
9.7	35.18	10.1	9.6	57.77	17.0	9.5	63.75	26.4	9.4	52.12	36.4
10.7	36.20	10.2	10.6	58.16	17.3	10.5	63.56	26.7	10.4	51.52	36.7
11.7	37.16	10.4	11.6	58.50	17.6	11.5	63.37	27.0	11.4	50.94	37.0
12.7	38.05	10.6	12.6	58.81	17.9	12.5	63.22	27.3	12.4	50.38	37.3
13.7	38.88	10.8	13.6	59.13	18.1	13.5	63.09	27.6	13.4	49.79	37.6
14.7	39.66	11.0	14.6	59.48	18.4	14.5	63.01	27.9	14.4	49.17	37.9
15.7	40.41	11.2	15.6	59.86	18.6	15.5	62.95	28.2	15.4	48.47	38.3
16.7	41.14	11.4	16.6	60.28	18.9	16.5	62.88	28.5	16.4	47.70	38.6
17.7	41.89	11.5	17.6	60.73	19.2	17.5	62.77	28.9	17.4	46.86	38.9
18.7	42.68	11.7	18.6	61.18	19.5	18.5	62.61	29.2	18.4	45.96	39.2
19.7	43.50	11.8	19.6	61.62	19.8	19.5	62.37	29.6	19.4	45.02	39.5
20.7	44.37	12.0	20.6	62.01	20.1	20.5	62.06	30.0	20.4	44.08	39.8
21.7	45.27	12.2	21.6	62.35	20.5	21.5	61.67	30.3	21.4	43.15	40.1
22.7	46.18	12.4	22.6	62.61	20.8	22.5	61.24	30.7	22.4	42.27	40.3
23.7	47.06	12.6	23.6	62.80	21.2	23.5	60.78	31.0	23.4	41.42	40.5
24.7	47.90	12.9	24.6	62.92	21.5	24.5	60.32	31.3	24.4	40.61	40.8
25.7	48.67	13.2	25.6	62.99	21.8	25.5	59.68	31.6	25.4	39.83	41.1
26.7	49.37	13.4	26.6	63.05	22.1	26.5	50.48	31.9	26.4	39.05	41.3
27.7	50.00	13.7	27.6	63.11	22.4	27.5	59.11	32.2	27.4	38.23	41.6
28.6	50.58	13.9	28.6	63.21	22.7	28.5	58.78	32.5	28.4	37.37	41.9
29.6	51.12	14.2	29.6	63.35	23.0	29.5	58.46	32.8	29.4	36.45	42.2
30.6	51.66	14.4	30.6	63.53	23.3	30.5	58.11	33.2	30.4	35.45	42.5
31.6	52.22	14.6	31.6	63.72	23.6	31.5	57.75	33.5	31.4	34.39	42.8
32.6	52.83	14.8	32.6	63.91	23.9	32.5	57.31	33.9	32.4	33.27	43.1

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 19 50	° ′ 88 55		h m 19 50	° ′ 88 55		h m 19 49	° ′ 88 55		h m 19 49	° ′ 88 55
	s	″		s	″		s	″		s	″
1.4	93.27	43.1	1.3	57.84	49.0	1.2	75.81	50.8	1.1	38.12	47.7
2.4	92.14	43.3	2.3	56.49	49.1	2.2	74.57	50.7	2.1	37.09	47.5
3.4	91.00	43.6	3.3	55.18	49.2	3.2	73.34	50.7	3.1	36.01	47.4
4.4	89.90	43.8	4.3	53.93	49.3	4.2	72.08	50.7	4.1	34.90	47.2
5.4	88.83	44.0	5.3	52.71	49.4	5.2	70.79	50.7	5.1	33.75	47.1
6.4	87.81	44.2	6.3	51.51	49.5	6.2	69.44	50.7	6.1	32.57	46.9
7.4	86.83	44.4	7.3	50.29	49.6	7.2	68.03	50.7	7.1	31.40	46.7
8.4	85.87	44.6	8.3	49.04	49.8	8.2	66.59	50.6	8.1	30.26	46.4
9.4	84.89	44.8	9.3	47.73	49.9	9.2	65.13	50.6	9.1	29.18	46.2
10.4	83.89	45.1	10.3	46.36	50.1	10.2	63.69	50.5	10.1	28.18	45.9
11.4	82.84	45.4	11.3	44.93	50.2	11.2	62.27	50.4	11.1	27.24	45.7
12.4	81.72	45.6	12.3	43.46	50.3	12.2	60.91	50.3	12.1	26.38	45.4
13.4	80.53	45.9	13.3	41.97	50.4	13.2	59.61	50.2	13.1	25.55	45.2
14.3	79.29	46.1	14.3	40.49	50.4	14.2	58.38	50.0	14.1	24.73	44.9
15.3	78.01	46.3	15.3	39.05	50.4	15.2	57.19	49.9	15.1	23.94	44.7
16.3	76.70	46.5	16.3	37.66	50.5	16.2	56.04	49.8	16.1	23.11	44.5
17.3	75.40	46.7	17.3	36.32	50.5	17.2	54.89	49.7	17.1	22.25	44.3
18.3	74.14	46.8	18.3	35.03	50.5	18.2	53.71	49.6	18.1	21.35	44.1
19.3	72.93	47.0	19.3	33.77	50.5	19.2	52.49	49.6	19.1	20.41	43.8
20.3	71.78	47.2	20.3	32.52	50.6	20.2	51.22	49.5	20.1	19.46	43.6
21.3	70.66	47.3	21.2	31.25	50.7	21.2	49.91	49.4	21.1	18.54	43.3
22.3	69.55	47.5	22.2	29.94	50.7	22.2	48.57	49.3	22.1	17.66	43.0
23.3	68.44	47.7	23.2	28.58	50.8	23.2	47.22	49.1	23.1	16.84	42.7
24.3	67.29	47.9	24.2	27.16	50.9	24.2	45.90	49.0	24.1	16.11	42.4
25.3	66.08	48.1	25.2	25.69	50.9	25.2	44.62	48.8	25.1	15.45	42.1
26.3	64.80	48.3	26.2	24.19	50.9	26.1	43.41	48.6	26.1	14.85	41.8
27.3	63.46	48.5	27.2	22.68	50.9	27.1	42.26	48.4	27.1	14.30	41.5
28.3	62.07	48.6	28.2	21.20	50.9	28.1	41.18	48.2	28.1	13.76	41.2
29.3	60.66	48.8	29.2	19.77	50.9	29.1	40.15	48.0	29.1	13.22	40.9
30.3	59.23	48.9	30.2	18.39	50.8	30.1	39.14	47.9	30.1	12.64	40.7
31.3	57.84	49.0	31.2	17.07	50.8	31.1	38.12	47.7	31.1	12.03	40.4
32.3	56.49	49.1	32.2	15.81	50.8	32.1	37.09	47.5	32.1	11.39	40.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.				γ Pegasi. (*Algenib.*)				*β Hydri.				α Cassiopeæ.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*	
	h m 0 1		° ′ 28 23		h m 0 6		° ′ 14 28		h m 0 18		° ′ 77 57		h m 0 33		° ′ 55 50	
	s		″		s		″		s		″		s		″	
Jan. 0.2	48.28	−.13	24.4	−0.8	40.72	−.11	37.4	−0.7	62.31	−.90	99.2	−0.9	17.36	−.28	36.4	−0.2
10.2	48.15	.13	23.5	1.1	40.61	.11	36.6	0.9	61.43	.85	98.1	1.5	17.08	.28	35.9	0.7
20.2	48.02	.12	22.3	1.3	40.50	.10	35.7	1.0	60.62	.77	96.3	2.0	16.80	.28	35.0	1.2
30.2	47.90	.10	20.9	1.4	40.41	.09	34.7	1.0	59.89	.68	94.0	2.5	16.53	.25	33.6	1.6
Feb. 9.1	47.81	.08	19.4	1.6	40.33	.07	33.7	1.0	59.27	.56	91.3	2.9	16.29	.22	31.8	2.0
19.1	47.74	.05	17.8	1.6	40.27	.04	32.7	0.9	58.77	.43	88.2	3.3	16.08	.18	29.7	2.2
Mar. 1.1	47.70	−.02	16.2	1.5	40.24	−.01	31.9	0.8	58.41	.29	84.7	3.6	15.93	.12	27.3	2.4
11.0	47.70	+.02	14.7	1.4	40.25	+.02	31.1	0.7	58.19	−.14	81.0	3.8	15.84	−.06	24.9	2.5
21.0	47.74	.06	13.3	1.2	40.29	.06	30.5	0.5	58.14	+.02	77.2	3.9	15.81	+.01	22.4	2.4
31.0	47.83	.11	12.2	1.0	40.37	.10	30.2	−0.2	58.23	.17	73.3	3.9	15.86	.06	20.0	2.3
Apr. 10.0	47.96	.16	11.4	0.7	40.49	.14	30.2	+0.1	58.49	.33	69.4	3.8	15.98	.16	17.7	2.1
19.9	48.14	.20	10.9	−0.3	40.65	.18	30.4	0.4	58.90	.49	65.7	3.7	16.17	.23	15.8	1.8
29.9	48.36	.24	10.8	+0.1	40.85	.22	31.0	0.7	59.47	.63	62.1	3.4	16.44	.30	14.2	1.4
May 9.9	48.62	.28	11.0	0.5	41.09	.26	31.9	1.0	60.17	.77	58.8	3.2	16.77	.36	13.1	0.9
19.9	48.92	.31	11.7	0.8	41.36	.28	33.1	1.3	61.00	.89	55.8	2.8	17.15	.40	12.4	−0.5
29.8	49.24	.33	12.7	1.2	41.66	.31	34.6	1.6	61.95	.99	53.2	2.4	17.58	.44	12.2	0.0
June 8.8	49.58	.34	14.1	1.6	41.98	.32	36.3	1.8	62.98	1.06	51.0	1.9	18.04	.47	12.5	+0.6
18.8	49.93	.35	15.8	1.9	42.30	.33	38.2	2.0	64.08	1.12	49.4	1.4	18.52	.48	13.3	1.0
28.7	50.27	.34	17.8	2.1	42.63	.32	40.3	2.1	65.21	1.14	48.2	0.8	19.00	.48	14.6	1.5
July 8.7	50.61	.33	20.1	2.3	42.95	.31	42.5	2.2	66.35	1.13	47.7	−0.3	19.48	.47	16.3	1.9
18.7	50.93	.31	22.4	2.4	43.25	.29	44.7	2.2	67.47	1.09	47.7	+0.3	19.94	.44	18.4	2.3
28.7	51.23	.28	25.0	2.5	43.54	.27	46.9	2.2	68.54	1.02	48.3	0.9	20.37	.41	20.8	2.6
Aug. 7.6	51.49	.25	27.5	2.6	43.80	.24	49.0	2.1	69.52	.93	49.5	1.4	20.76	.37	23.6	2.9
17.6	51.72	.21	30.1	2.5	44.02	.20	51.0	2.0	70.39	.80	51.1	1.9	21.11	.32	26.6	3.1
27.6	51.91	.17	32.6	2.4	44.20	.17	52.9	1.8	71.12	.65	53.2	2.3	21.41	.27	29.7	3.2
Sept. 6.6	52.05	.13	35.0	2.3	44.35	.13	54.7	1.6	71.68	.48	55.7	2.6	21.65	.21	33.0	3.3
16.5	52.16	.09	37.2	2.2	44.46	.09	56.2	1.4	72.07	.29	58.5	2.9	21.84	.16	36.3	3.3
26.5	52.23	.05	39.3	2.0	44.53	.06	57.5	1.2	72.27	+.10	61.4	3.0	21.97	.10	39.6	3.2
Oct. 6.5	52.26	+.01	41.2	1.8	44.57	+.02	58.6	1.0	72.27	−.09	64.5	3.0	22.04	+.04	42.8	3.1
16.4	52.25	−.02	42.8	1.5	44.58	−.01	59.4	0.7	72.09	.28	67.4	2.9	22.05	−.01	45.8	2.9
26.4	52.22	.05	44.2	1.2	44.56	.03	60.0	0.5	71.72	.45	70.2	2.6	22.02	.06	48.6	2.7
Nov. 5.4	52.16	.07	45.3	0.9	44.51	.06	60.5	0.3	71.19	.60	72.7	2.3	21.93	.11	51.2	2.4
15.4	52.07	.09	46.1	0.6	44.44	.08	60.6	+0.1	70.53	.72	74.8	1.9	21.80	.15	53.4	2.0
25.3	51.97	.11	46.6	+0.3	44.36	.09	60.6	−0.1	69.75	.82	76.4	1.3	21.63	.19	55.2	1.6
Dec. 5.3	51.85	.12	46.8	0.0	44.26	.10	60.4	0.3	68.89	.88	77.5	0.8	21.42	.23	56.6	1.1
15.3	51.72	.13	46.7	−0.3	44.16	.11	60.0	0.5	67.98	.91	78.0	+0.1	21.18	.25	57.5	0.7
25.3	51.59	.13	46.2	0.6	44.05	.11	59.4	0.6	67.06	.91	77.8	−0.5	20.91	.27	58.0	+0.2
35.2	51.45	−.13	45.5	−0.9	43.94	−.11	58.7	−0.8	66.15	−.88	77.0	−1.1	20.64	−.28	57.9	−0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ceti.		*21 Cassiopeæ.		ε Piscium.		θ¹ Ceti.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 0 37	° ′ 18 40	h m 0 37	° ′ 74 17	h m 0 56	° ′ 7 12	h m 1 17	° ′ 8 50
	s	″	s	″	s	″	s	″
Jan. 0.3	11.99 −.12	75.2 +0.5	15.79 −.71	48.5 +0.3	20.38 −.11	18.0 −0.6	39.94 −.11	29.1 +0.7
10.2	11.88 .12	75.6 +0.3	15.08 .71	48.5 −0.3	20.27 .11	17.4 0.6	39.83 .12	29.7 0.5
20.2	11.76 .11	75.7 0.0	14.37 .69	47.8 1.0	20.16 .11	16.7 0.6	39.71 .12	30.2 0.4
30.2	11.65 .10	75.6 −0.2	13.70 .64	46.6 1.5	20.05 .11	16.1 0.6	39.59 .12	30.5 +0.2
Feb. 9.2	11.56 .09	75.3 0.5	13.09 .57	44.8 2.0	19.94 .10	15.4 0.6	39.48 .11	30.6 0.0
19.1	11.48 .07	74.6 0.8	12.56 .47	42.6 2.4	19.85 .08	14.9 0.5	39.38 .09	30.4 −0.2
Mar. 1.1	11.43 .04	73.7 1.1	12.15 .35	40.0 2.7	19.78 .06	14.5 0.3	39.29 .07	30.1 0.5
11.1	11.40 −.01	72.5 1.3	11.87 .21	37.2 2.9	19.74 −.02	14.2 −0.2	39.23 .05	29.5 0.7
21.1	11.41 +.03	71.1 1.5	11.74 −.06	34.3 2.9	19.73 +.01	14.1 0.0	39.20 −.01	28.7 0.9
31.0	11.46 .07	69.4 1.8	11.75 +.09	31.4 2.9	19.76 .04	14.3 +0.2	39.21 +.03	27.6 1.2
Apr. 10.0	11.55 .11	67.5 2.0	11.92 .24	28.6 2.7	19.83 .09	14.6 0.5	39.25 .07	26.3 1.4
20.0	11.68 .15	65.4 2.2	12.24 .39	26.0 2.4	19.95 .13	15.2 0.7	39.34 .11	24.8 1.6
29.9	11.85 .19	63.1 2.3	12.70 .52	23.8 2.0	20.10 .18	16.1 1.0	39.47 .15	23.0 1.8
May 9.9	12.06 .23	60.8 2.4	13.28 .64	21.9 1.6	20.30 .22	17.3 1.2	39.64 .19	21.1 2.0
19.9	12.31 .26	58.4 2.4	13.97 .73	20.5 1.1	20.53 .25	18.6 1.5	39.86 .23	19.0 2.1
29.9	12.59 .29	55.9 2.4	14.75 .80	19.7 −0.6	20.80 .28	20.2 1.7	40.10 .26	16.8 2.2
June 8.8	12.90 .31	53.5 2.3	15.58 .85	19.4 0.0	21.09 .30	22.0 1.8	40.38 .29	14.6 2.2
18.8	13.22 .32	51.2 2.2	16.46 .88	19.6 +0.5	21.40 .31	23.9 2.0	40.68 .31	12.3 2.2
28.8	13.55 .33	49.1 2.0	17.34 .88	20.4 1.0	21.72 .32	25.9 2.0	41.00 .32	10.2 2.1
July 8.8	13.88 .33	47.2 1.8	18.21 .86	21.7 1.6	22.04 .32	28.0 2.0	41.31 .32	8.1 2.0
18.7	14.21 .32	45.5 1.5	19.05 .82	23.6 2.0	22.36 .31	30.0 2.0	41.63 .31	6.2 1.8
28.7	14.51 .30	44.2 1.2	19.84 .75	25.8 2.5	22.66 .29	32.0 1.9	41.94 .30	4.5 1.6
Aug. 7.7	14.80 .27	43.2 0.8	20.56 .68	28.5 2.8	22.94 .27	33.8 1.8	42.23 .28	3.0 1.3
17.6	15.06 .24	42.5 0.5	21.20 .59	31.5 3.1	23.20 .24	35.5 1.6	42.50 .26	1.8 1.0
27.6	15.28 .20	42.2 −0.1	21.74 .49	34.8 3.4	23.42 .21	37.0 1.4	42.75 .23	1.0 0.7
Sept. 6.6	15.46 .17	42.3 +0.2	22.18 .38	38.3 3.6	23.62 .18	38.4 1.2	42.96 .20	0.5 0.4
16.6	15.61 .13	42.6 0.5	22.51 .27	41.9 3.7	23.78 .14	39.5 1.0	43.14 .16	0.2 −0.1
26.5	15.72 .09	43.3 0.8	22.73 .15	45.7 3.7	23.90 .11	40.3 0.7	43.28 .13	0.3 +0.2
Oct. 6.5	15.78 .05	44.2 1.0	22.82 +.04	49.4 3.7	23.99 .07	41.0 0.5	43.39 .09	0.6 0.5
16.5	15.81 +.02	45.3 1.2	22.80 −.08	53.0 3.6	24.05 .04	41.4 0.3	43.46 .06	1.2 0.7
26.5	15.81 −.01	46.5 1.3	22.66 .19	56.5 3.4	24.07 +.01	41.6 +0.1	43.51 +.03	2.0 0.8
Nov. 5.4	15.79 .04	47.8 1.3	22.41 .30	59.8 3.1	24.07 −.01	41.6 0.0	43.52 .00	2.9 0.9
15.4	15.73 .06	49.1 1.3	22.06 .40	62.7 2.7	24.05 .04	41.5 −0.2	43.51 −.02	3.9 1.0
25.4	15.66 .08	50.3 1.2	21.60 .50	65.2 2.3	24.00 .06	41.2 0.3	43.47 .05	4.9 1.0
Dec. 5.3	15.57 .10	51.4 1.0	21.06 .58	67.3 1.8	23.94 .07	40.8 0.4	43.42 .07	5.9 1.0
15.3	15.46 .11	52.4 0.9	20.45 .64	68.8 1.2	23.86 .09	40.3 0.5	43.34 .08	6.9 0.9
25.3	15.35 .11	53.2 0.7	19.78 .68	69.8 +0.6	23.76 .10	39.8 0.6	43.25 .10	7.7 0.8
35.3	15.23 −.12	53.7 +0.4	19.08 −.71	70.1 0.0	23.66 −.11	39.2 −0.6	43.14 −.11	8.4 +0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*38 Cassiopeæ.		*η* Piscium.		*α* Eridani. (*Achernar.*)		*o* Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 1 21	° ′ 69 36	h m 1 24	° ′ 14 41	h m 1 32	° ′ 57 52	h m 1 38	° ′ 8 30
	s	″	s	″	s	″	s	″
Jan. 0.3	47.52 −.49	49.7 +0.7	40.62 −.11	26.1 −0.5	59.07 −.31	77.6 +0.6	40.81 −.10	61.7 −0.5
10.2	47.01 .52	50.2 +0.2	40.50 .12	25.5 0.6	58.75 .32	77.8 0.0	40.70 −.11	61.2 0.6
20.2	46.48 .53	50.1 −0.4	40.38 .13	24.9 0.7	58.43 .32	77.6 −0.6	40.58 .12	60.6 0.6
30.2	45.96 .51	49.4 1.0	40.25 .13	24.2 0.7	58.11 .31	76.7 1.1	40.46 .12	60.0 0.6
Feb. 9.2	45.45 .48	48.1 1.5	40.13 .12	23.5 0.7	57.81 .29	75.4 1.6	40.33 .12	59.5 0.5
19.1	45.00 .42	46.4 1.9	40.02 .10	22.8 0.7	57.53 .26	73.5 2.1	40.21 .11	59.0 0.5
Mar. 1.1	44.61 .35	44.3 2.3	39.92 .08	22.1 0.6	57.29 .22	71.2 2.5	40.11 .09	58.6 0.3
11.1	44.31 .25	41.8 2.5	39.85 .05	21.5 0.5	57.10 .17	68.5 2.9	40.04 .06	58.3 −0.2
21.1	44.11 .14	39.2 2.7	39.82 −.02	21.0 0.4	56.95 .11	65.4 3.2	39.99 −.03	58.1 0.0
31.0	44.02 −.03	36.4 2.7	39.82 +.02	20.7 −0.2	56.87 −.05	62.1 3.4	39.98 +.01	58.2 +0.1
Apr. 10.0	44.05 +.09	33.7 2.6	39.86 .07	20.5 0.0	56.85 +.02	58.6 3.6	40.01 .05	58.4 0.4
20.0	44.21 .21	31.2 2.5	39.95 .11	20.7 +0.3	56.90 .09	55.0 3.6	40.08 .09	58.9 0.6
29.9	44.48 .33	28.8 2.2	40.08 .15	21.1 0.5	57.02 .16	51.4 3.7	40.19 .14	59.7 0.9
May 9.9	44.86 .43	26.8 1.8	40.26 .20	21.7 0.8	57.21 .22	47.7 3.6	40.36 .18	60.6 1.1
19.9	45.35 .53	25.1 1.4	40.48 .24	22.7 1.1	57.47 .29	44.2 3.4	40.56 .22	61.8 1.3
29.9	45.91 .60	24.0 0.9	40.73 .27	23.9 1.3	57.79 .35	40.8 3.2	40.80 .25	63.3 1.5
June 8.8	46.55 .66	23.3 −0.4	41.02 .30	25.3 1.5	58.17 .40	37.7 2.9	41.07 .28	64.9 1.7
18.8	47.24 .70	23.1 +0.1	41.32 .32	26.9 1.7	58.59 .44	35.0 2.5	41.36 .30	66.7 1.8
28.8	47.95 .72	23.4 0.6	41.65 .32	28.7 1.8	59.05 .47	32.7 2.1	41.67 .32	68.5 1.9
July 8.8	48.68 .72	24.3 1.1	41.97 .33	30.6 1.9	59.53 .49	30.8 1.6	42.00 .32	70.5 1.9
18.7	49.40 .71	25.6 1.6	42.30 .32	32.5 2.0	60.02 .49	29.4 1.1	42.32 .32	72.4 1.9
28.7	50.10 .68	27.4 2.0	42.61 .31	34.5 2.0	60.51 .48	28.6 −0.5	42.63 .31	74.3 1.9
Aug. 7.7	50.76 .64	29.6 2.4	42.91 .29	36.5 1.9	60.98 .46	28.4 0.0	42.93 .29	76.1 1.7
17.6	51.37 .58	32.1 2.7	43.19 .26	38.4 1.8	61.43 .42	28.7 +0.6	43.21 .27	77.8 1.6
27.6	51.92 .52	35.0 3.0	43.44 .23	40.1 1.7	61.83 .38	29.6 1.1	43.47 .24	79.4 1.4
Sept. 6.6	52.40 .44	38.1 3.2	43.66 .20	41.7 1.5	62.18 .32	31.0 1.6	43.70 .21	80.7 1.2
16.6	52.81 .36	41.5 3.4	43.85 .17	43.2 1.3	62.48 .26	32.9 2.1	43.89 .18	81.8 1.0
26.5	53.13 .28	44.9 3.5	44.00 .14	44.4 1.2	62.71 .19	35.2 2.4	44.06 .15	82.7 0.8
Oct. 6.5	53.36 .19	48.5 3.5	44.13 .11	45.5 0.9	62.87 .12	37.8 2.7	44.19 .12	83.3 0.6
16.5	53.50 .10	52.0 3.5	44.22 .07	46.3 0.7	62.96 +.05	40.6 2.8	44.29 .09	83.8 0.4
26.5	53.56 +.01	55.4 3.4	44.27 .04	47.0 0.6	62.98 −.01	43.4 2.9	44.36 .06	84.0 +0.2
Nov. 5.4	53.52 −.08	58.7 3.2	44.30 +.01	47.4 0.4	62.93 .08	46.3 2.8	44.41 +.03	84.1 0.0
15.4	53.39 .17	61.7 2.9	44.30 −.01	47.7 +0.2	62.82 .14	49.0 2.6	44.42 .00	84.0 −0.1
25.4	53.17 .25	64.4 2.5	44.28 .04	47.8 0.0	62.65 .19	51.5 2.3	44.41 −.02	83.8 0.3
Dec. 5.3	52.88 .33	66.8 2.1	44.23 .06	47.8 −0.1	62.43 .24	53.6 1.9	44.37 .05	83.5 0.4
15.3	52.51 .40	68.7 1.6	44.16 .08	47.6 0.3	62.17 .27	55.2 1.4	44.31 .07	83.1 0.4
25.3	52.08 .46	70.0 1.1	44.07 .10	47.3 0.4	61.89 .30	56.4 0.9	44.23 .09	82.6 0.5
35.3	51.60 −.50	70.9 +0.5	43.97 −.11	46.8 −0.5	61.58 −.32	57.0 +0.4	44.14 −.10	82.1 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (*Aldebaran.*)		*9 Camelopardalis.		ι Aurigæ.		11 Orionis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 28	° ′ 16 15	h m 4 41	° ′ 66 7	h m 4 48	° ′ 32 57	h m 4 57	° ′ 15 13
	s	″	s	″	s	″	s	″
Jan. 0.4	38.28 .00	10.8 −0.2	27.21 −.07	34.2 +2.4	43.77 +.01	51.7 +0.8	19.12 +.02	34.1 −0.2
10.4	38.26 −.04	10.6 0.2	27.09 .17	36.5 2.1	43.76 −.03	52.5 0.7	19.12 −.02	33.8 0.2
20.4	38.19 .08	10.4 0.2	26.88 .26	38.5 1.8	43.70 .08	53.1 0.6	19.08 .06	33.6 0.2
30.3	38.09 .12	10.3 0.2	26.57 .34	40.1 1.4	43.60 .12	53.6 0.4	18.99 .10	33.5 0.2
Feb. 9.3	37.96 .14	10.1 0.2	26.20 .40	41.3 1.0	43.46 .16	53.9 0.3	18.87 .13	33.3 0.1
19.3	37.80 .16	9.9 0.2	25.78 .44	42.1 +0.5	43.28 .18	54.1 +0.1	18.73 .15	33.2 0.1
Mar. 1.2	37.64 .17	9.7 0.2	25.32 .46	42.3 0.0	43.09 .19	54.1 −0.1	18.57 .17	33.1 0.1
11.2	37.47 .16	9.5 0.2	24.86 .45	42.1 −0.5	42.89 .19	53.9 0.3	18.39 .17	33.0 0.1
21.2	37.31 .15	9.3 0.2	24.42 .42	41.4 0.9	42.70 .19	53.6 0.4	18.23 .16	32.9 −0.1
31.2	37.17 .13	9.2 −0.1	24.02 .37	40.2 1.3	42.52 .16	53.1 0.5	18.07 .14	32.8 0.0
Apr. 10.1	37.05 .10	9.1 0.0	23.68 .30	38.7 1.7	42.38 .13	52.5 0.6	17.94 .13	32.8 0.0
20.1	36.97 .06	9.1 0.0	23.41 .22	36.9 1.9	42.27 .09	51.9 0.7	17.84 .08	32.9 +0.1
30.1	36.93 −.02	9.2 +0.2	23.24 .12	34.8 2.1	42.20 −.04	51.2 0.7	17.78 −.04	33.0 0.2
May 10.1	36.94 +.03	9.4 0.3	23.17 −.02	32.6 2.2	42.19 +.01	50.5 0.7	17.76 .00	33.3 0.3
20.0	36.99 .08	9.7 0.4	23.20 +.08	30.4 2.2	42.23 .06	49.9 0.6	17.78 +.05	33.7 0.4
30.0	37.09 .12	10.2 0.5	23.33 .18	28.1 2.2	42.32 .12	49.3 0.5	17.85 .09	34.1 0.5
June 9.0	37.23 .17	10.8 0.7	23.56 .28	26.0 2.0	42.46 .17	48.9 0.4	17.97 .14	34.7 0.7
18.9	37.42 .20	11.6 0.8	23.89 .37	24.0 1.9	42.65 .21	48.6 0.2	18.13 .18	35.4 0.8
28.9	37.64 .24	12.5 0.9	24.31 .45	22.3 1.6	42.88 .25	48.5 −0.1	18.33 .21	36.2 0.8
July 8.9	37.89 .27	13.4 1.0	24.80 .52	20.8 1.3	43.15 .28	48.5 +0.1	18.56 .24	37.1 0.9
18.9	38.17 .29	14.5 1.1	25.35 .59	19.7 1.0	43.45 .31	48.7 0.2	18.81 .27	38.1 0.9
28.8	38.47 .30	15.5 1.1	25.96 .62	18.8 0.7	43.78 .33	48.9 0.4	19.09 .29	39.0 0.9
Aug. 7.8	38.78 .31	16.6 1.0	26.60 .66	18.3 −0.3	44.12 .35	49.4 0.5	19.39 .30	40.0 0.9
17.8	39.09 .32	17.6 1.0	27.27 .68	18.2 0.0	44.47 .36	49.9 0.6	19.69 .31	40.9 0.9
27.8	39.41 .31	18.6 0.9	27.96 .69	18.4 +0.4	44.83 .36	50.5 0.6	20.00 .31	41.7 0.8
Sept. 6.7	39.72 .31	19.5 0.8	28.64 .68	19.0 0.7	45.18 .35	51.2 0.7	20.32 .31	42.4 0.6
16.7	40.02 .30	20.2 0.7	29.32 .67	19.9 1.1	45.54 .35	52.0 0.7	20.63 .31	43.0 0.5
26.7	40.32 .29	20.8 0.5	29.98 .65	21.2 1.4	45.88 .34	52.7 0.8	20.93 .30	43.4 0.3
Oct. 6.6	40.60 .27	21.3 0.4	30.62 .61	22.7 1.7	46.21 .32	53.5 0.8	21.22 .29	43.7 0.2
16.6	40.86 .25	21.6 0.2	31.21 .57	24.6 2.0	46.53 .31	54.3 0.8	21.50 .27	43.8 +0.1
26.6	41.11 .23	21.8 +0.1	31.76 .52	26.7 2.2	46.82 .28	55.1 0.8	21.76 .25	43.8 −0.1
Nov. 5.6	41.33 .20	21.8 0.0	32.25 .45	29.0 2.4	47.10 .25	55.9 0.8	22.01 .23	43.7 0.2
15.5	41.52 .18	21.8 −0.1	32.67 .38	31.5 2.6	47.33 .22	56.8 0.8	22.22 .20	43.5 0.3
25.5	41.68 .14	21.7 0.1	33.00 .29	34.1 2.7	47.54 .19	57.6 0.8	22.41 .17	43.2 0.3
Dec. 5.5	41.80 .11	21.6 0.1	33.25 .20	36.8 2.7	47.71 .14	58.5 0.8	22.57 .13	42.9 0.3
15.5	41.89 .07	21.4 0.2	33.40 +.10	39.5 2.6	47.83 .10	59.3 0.8	22.68 .09	42.6 0.3
25.4	41.94 +.02	21.2 0.2	33.45 .00	42.1 2.5	47.90 +.05	60.1 0.8	22.76 .05	42.3 0.3
35.4	41.94 −.02	21.1 −0.2	33.40 −.10	44.6 +2.3	47.92 .00	60.9 +0.7	22.79 +.01	42.0 −0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ι Cassiopeæ.		γ Ceti.		α Ceti.		*48 Cephei.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 18	° ′ 66 49	h m 2 36	° ′ 2 41	h m 2 55	° ′ 3 35	h m 3 4	° ′ 77 15
	s	″	s	″	s	″	s	″
Jan. 0.3	37.22 −.35	59.2 +1.4	43.06 −.08	55.3 −0.7	38.38 −.07	22.4 −0.7	17.99 −.59	65.1 +2.1
10.3	36.84 .41	60.3 0.8	42.97 .10	54.7 0.6	38.29 .10	21.7 0.6	17.34 .71	67.0 1.7
20.3	36.41 .44	60.9 +0.3	42.85 .12	54.1 0.5	39.19 .12	21.2 0.5	16.58 .80	68.4 1.1
30.3	35.96 .46	60.9 −0.3	42.72 .13	53.6 0.4	38.06 .13	20.7 0.4	15.74 .86	69.2 +0.5
Feb. 9.2	35.49 .46	60.3 0.8	42.58 .14	53.2 0.3	37.92 .14	20.3 0.4	14.85 .89	69.4 −0.1
19.2	35.04 .43	59.3 1.3	42.44 .14	52.9 0.2	37.77 .14	20.0 0.2	13.96 .88	69.1 0.7
Mar. 1.2	34.63 .38	57.8 1.7	42.31 .13	52.8 −0.1	37.63 .14	19.8 −0.1	13.10 .82	68.1 1.2
11.2	34.28 .32	55.9 2.1	42.19 .11	52.7 +0.1	37.50 .12	19.7 0.0	12.31 .73	66.7 1.7
21.1	33.99 .24	53.7 2.3	42.09 .08	52.9 0.3	37.39 .09	19.9 +0.2	11.63 .61	64.7 2.1
31.1	33.80 .14	51.3 2.4	42.03 .05	53.3 0.4	37.31 .06	20.2 0.4	11.09 .46	62.5 2.4
Apr. 10.1	33.71 −.04	48.8 2.5	42.00 −.01	53.8 0.7	37.26 −.02	20.6 0.6	10.71 .29	60.0 2.6
20.0	33.73 +.07	46.3 2.5	42.01 +.04	54.6 0.9	37.26 +.02	21.3 0.8	10.51 −.11	57.3 2.7
30.0	33.85 .18	43.8 2.3	42.07 .08	55.5 1.1	37.30 .06	22.2 1.0	10.49 +.08	54.5 2.7
May 10.0	34.09 .28	41.6 2.1	42.17 .13	56.7 1.3	37.39 .11	23.3 1.2	10.67 .27	51.8 2.6
20.0	34.42 .38	39.7 1.8	42.32 .17	58.1 1.5	37.52 .15	24.6 1.4	11.04 .45	49.3 2.4
29.9	34.85 .47	38.1 1.4	42.51 .21	59.7 1.6	37.69 .19	26.1 1.5	11.57 .62	47.0 2.1
June 8.9	35.35 .54	36.9 1.0	42.74 .24	61.4 1.8	37.91 .23	27.7 1.7	12.27 .76	45.1 1.8
18.9	35.92 .59	36.2 0.5	43.00 .27	63.2 1.9	38.15 .26	29.4 1.8	13.10 .89	43.4 1.4
28.9	36.54 .63	35.9 −0.1	43.28 .29	65.1 1.9	38.43 .28	31.2 1.8	14.05 .99	42.3 1.0
July 8.8	37.19 .66	36.0 +0.4	43.58 .31	67.0 1.9	38.72 .30	33.1 1.8	15.08 1.07	41.5 −0.5
18.8	37.86 .67	36.7 0.9	43.89 .31	68.9 1.8	39.03 .31	34.9 1.8	16.18 1.12	41.3 0.0
28.8	38.53 .66	37.7 1.3	44.21 .31	70.6 1.7	39.34 .31	36.6 1.7	17.32 1.14	41.6 +0.4
Aug. 7.7	39.19 .64	39.2 1.7	44.51 .30	72.3 1.6	39.65 .31	38.3 1.5	18.47 1.15	42.1 0.9
17.7	39.82 .61	41.1 2.1	44.81 .29	73.8 1.4	39.95 .30	39.7 1.4	19.61 1.13	43.3 1.4
27.7	40.42 .57	43.3 2.4	45.09 .27	75.0 1.1	40.24 .28	41.0 1.1	20.73 1.09	44.9 1.8
Sept. 6.7	40.97 .52	45.9 2.7	45.36 .25	76.0 0.9	40.51 .26	42.0 0.9	21.79 1.03	46.8 2.2
16.6	41.46 .46	48.7 2.9	45.60 .23	76.8 0.6	40.76 .24	42.8 0.6	22.78 .95	49.2 2.5
26.6	41.89 .40	51.7 3.1	45.81 .20	77.3 0.4	40.99 .21	43.3 0.4	23.69 .85	51.9 2.8
Oct. 6.6	42.26 .33	54.8 3.2	46.00 .17	77.5 +0.1	41.19 .19	43.5 +0.1	24.49 .74	54.8 3.0
16.6	42.55 .25	58.1 3.2	46.15 .14	77.6 −0.1	41.37 .16	43.5 −0.1	25.18 .62	57.9 3.2
26.5	42.77 .17	61.3 3.2	46.28 .11	77.4 0.3	41.52 .13	43.4 0.3	25.73 .48	61.3 3.4
Nov. 5.5	42.90 .09	64.5 3.1	46.38 .08	77.0 0.4	41.63 .10	43.0 0.4	26.13 .33	64.7 3.4
15.5	42.95 +.01	67.6 3.0	46.45 .05	76.5 0.6	41.72 .07	42.5 0.5	26.38 +.17	68.1 3.4
25.4	42.91 −.08	70.5 2.8	46.48 +.02	75.9 0.6	41.78 .04	41.9 0.6	26.47 .00	71.5 3.3
Dec. 5.4	42.80 .16	73.1 2.5	46.49 −.01	75.2 0.7	41.80 +.01	41.2 0.7	26.38 −.17	74.7 3.1
15.4	42.60 .24	75.4 2.1	46.47 .03	74.5 0.7	41.80 −.02	40.5 0.7	26.13 .33	77.6 2.8
25.4	42.32 .31	77.3 1.6	46.42 .06	73.8 0.7	41.76 .05	39.8 0.7	25.72 .48	80.2 2.4
35.3	41.98 −.37	78.7 +1.1	46.35 −.09	73.1 −0.6	41.70 −.08	39.2 −0.6	25.16 −.62	82.4 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Arietis.		α Persei.		δ Persei.		η Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	3h 7m	20° 34′	3h 15m	49° 24′	3h 33m	47° 22′	3h 39m	23° 42′
	s	″	s	″	s	″	s	″
Jan. 0.4	36.09 −.07	24.2 −0.1	15.76 −.12	34.9 +1.2	53.29 −.09	53.9 +1.2	56.22 −.04	42.4 +0.2
10.3	36.01 .10	24.1 0.1	15.62 .17	35.9 0.9	53.17 .14	55.0 0.9	56.16 .08	42.5 +0.1
20.3	35.90 .12	23.9 0.2	15.43 .20	36.6 0.5	53.01 .18	55.7 0.6	56.06 .11	42.5 0.0
30.3	35.76 .14	23.6 0.3	15.21 .23	36.9 +0.1	52.81 .21	56.2 +0.3	55.93 .14	42.4 −0.2
Feb. 9.3	35.61 .16	23.2 0.4	14.96 .25	36.9 −0.2	52.58 .24	56.3 −0.1	55.78 .16	42.2 0.3
19.2	35.45 .16	22.8 0.5	14.71 .25	36.4 0.6	52.34 .25	56.0 0.4	55.61 .17	41.9 0.3
Mar. 1.2	35.29 .15	22.3 0.5	14.46 .24	35.7 0.9	52.09 .24	55.5 0.7	55.44 .17	41.5 0.4
11.2	35.15 .14	21.7 0.5	14.22 .22	34.6 1.2	51.86 .22	54.5 1.0	55.28 .16	41.0 0.5
21.2	35.02 .11	21.2 0.5	14.02 .18	33.2 1.5	51.65 .19	53.4 1.3	55.13 .13	40.5 0.5
31.1	34.93 .07	20.7 0.4	13.86 .13	31.6 1.6	51.48 .14	52.0 1.4	55.01 .10	40.0 0.5
Apr. 10.1	34.87 −.03	20.3 0.3	13.75 .07	30.0 1.7	51.36 .09	50.5 1.5	54.92 .06	39.5 0.4
20.1	34.86 +.01	20.0 −0.2	13.71 −.01	28.3 1.7	51.30 −.03	48.9 1.6	54.88 −.02	39.1 0.4
30.0	34.89 .06	19.9 0.0	13.73 +.06	26.6 1.6	51.30 +.03	47.4 1.5	54.88 +.03	38.8 0.2
May 10.0	34.98 .11	20.0 +0.2	13.83 .13	25.0 1.5	51.37 .10	45.9 1.4	54.94 .08	38.6 −0.1
20.0	35.11 .16	20.3 0.4	13.99 .19	23.6 1.3	51.50 .17	44.6 1.2	55.04 .13	38.6 +0.1
30.0	35.29 .20	20.7 0.6	14.22 .25	22.5 1.0	51.70 .23	43.4 1.0	55.19 .18	38.8 0.3
June 8.9	35.51 .24	21.4 0.8	14.50 .31	21.6 0.7	51.95 .28	42.5 0.8	55.39 .22	39.2 0.5
18.9	35.77 .27	22.3 1.0	14.83 .36	21.0 0.4	52.26 .33	41.9 0.5	55.63 .25	39.7 0.7
28.9	36.06 .30	23.4 1.1	15.21 .39	20.7 −0.1	52.61 .37	41.6 −0.2	55.90 .28	40.5 0.8
July 8.9	36.36 .32	24.6 1.3	15.62 .42	20.8 +0.2	52.99 .40	41.5 +0.1	56.20 .31	41.4 1.0
18.8	36.69 .33	26.0 1.4	16.05 .44	21.2 0.6	53.40 .42	41.8 0.4	56.51 .32	42.4 1.1
28.8	37.02 .33	27.4 1.5	16.49 .44	22.0 0.9	53.83 .43	42.4 0.7	56.84 .33	43.6 1.2
Aug. 7.8	37.35 .33	28.9 1.5	16.94 .44	23.0 1.2	54.26 .43	43.2 1.0	57.18 .34	44.8 1.2
17.7	37.67 .32	30.4 1.5	17.38 .44	24.3 1.4	54.69 .43	44.3 1.2	57.51 .33	46.1 1.3
27.7	37.98 .30	31.8 1.4	17.81 .42	25.8 1.6	55.11 .42	45.6 1.4	57.84 .32	47.3 1.2
Sept. 6.7	38.28 .29	33.2 1.3	18.22 .40	27.5 1.8	55.52 .40	47.1 1.6	58.15 .31	48.5 1.2
16.7	38.56 .27	34.5 1.2	18.60 .37	29.5 2.0	55.91 .37	48.8 1.8	58.46 .29	49.7 1.1
26.6	38.81 .24	35.7 1.1	18.96 .34	31.5 2.1	56.27 .35	50.6 1.9	58.74 .27	50.8 1.0
Oct. 6.6	39.04 .21	36.7 1.0	19.28 .30	33.7 2.2	56.60 .32	52.5 1.9	59.00 .25	51.8 1.0
16.6	39.24 .19	37.6 0.8	19.57 .26	35.9 2.2	56.91 .28	54.5 2.0	59.24 .22	52.7 0.9
26.6	39.41 .16	38.4 0.7	19.81 .22	38.1 2.2	57.17 .24	56.5 2.0	59.44 .19	53.5 0.8
Nov. 5.5	39.55 .13	39.0 0.6	20.01 .18	40.4 2.2	57.39 .20	58.6 2.0	59.63 .17	54.3 0.7
15.5	39.67 .09	39.6 0.5	20.17 .13	42.6 2.1	57.57 .15	60.6 2.0	59.78 .13	54.9 0.6
25.5	39.74 .06	40.0 0.4	20.27 .08	44.7 2.0	57.70 .10	62.6 1.9	59.89 .10	55.4 0.5
Dec. 5.4	39.78 +.03	40.3 0.2	20.32 +.02	46.7 1.9	57.78 +.05	64.5 1.8	59.97 .06	55.9 0.4
15.4	39.80 −.01	40.4 +0.1	20.32 −.03	48.4 1.6	57.81 .00	66.2 1.6	60.01 +.02	56.2 0.3
25.4	39.77 .04	40.5 0.0	20.26 .08	50.0 1.4	57.78 −.05	67.7 1.4	60.01 −.02	56.5 0.2
35.4	39.71 −.08	40.5 −0.1	20.15 −.13	51.2 +1.1	57.70 −.10	69.0 +1.2	59.97 −.06	56.7 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ^1 Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 46	° ′ 31 30	h m 3 52	° ′ 13 51	h m 4 12	° ′ 15 19	h m 4 21	° ′ 18 53
	s	″	s	″	s	″	s	″
Jan. 0.4	9.14 −.05	22.0 +0.6	6.55 −.05	80.1 +1.4	34.18 −.02	11.7 −0.2	12.29 −.01	52.5 0.0
10.3	9.07 .09	22.5 0.4	6.48 .08	81.5 1.2	34.14 .05	11.5 0.2	12.26 .05	52.4 0.0
20.3	8.96 .12	22.8 +0.2	6.38 .11	82.6 1.0	34.07 .09	11.3 0.2	12.19 .09	52.4 −0.1
30.3	8.82 .15	22.9 0.0	6.25 .14	83.4 0.7	33.96 .12	11.1 0.2	12.08 .12	52.3 0.1
Feb. 9.3	8.66 .17	22.8 −0.2	6.10 .16	84.0 0.4	33.82 .15	10.8 0.2	11.95 .15	52.1 0.1
19.2	8.47 .18	22.6 0.3	5.93 .17	84.3 +0.1	33.67 .16	10.6 0.2	11.79 .16	52.0 0.2
Mar. 1.2	8.29 .18	22.2 0.5	5.76 .17	84.2 −0.2	33.50 .16	10.4 0.2	11.62 .17	51.8 0.2
11.2	8.10 .17	21.3 0.6	5.59 .16	83.9 0.5	33.34 .16	10.2 0.2	11.45 .16	51.5 0.2
21.2	7.94 .15	20.9 0.7	5.44 .14	83.3 0.8	33.18 .14	10.0 0.2	11.29 .15	51.3 0.2
31.1	7.81 .12	20.1 0.8	5.30 .12	82.4 1.1	33.05 .12	9.8 −0.1	11.15 .13	51.1 0.2
Apr. 10.1	7.71 .08	19.3 0.8	5.20 .08	81.2 1.3	32.94 .09	9.8 0.0	11.04 .09	50.9 0.2
20.1	7.65 −.03	18.5 0.8	5.13 −.04	79.7 1.6	32.88 −.05	9.8 +0.1	10.96 .05	50.7 −0.1
30.0	7.65 +.02	17.8 0.7	5.11 .00	78.1 1.8	32.85 .00	9.9 0.2	10.93 −.01	50.7 0.0
May 10.0	7.70 .08	17.1 0.6	5.13 +.04	76.1 2.0	32.87 +.04	10.2 0.3	10.94 +.04	50.8 +0.1
20.0	7.80 .13	16.7 0.4	5.20 .09	74.0 2.2	32.94 .09	10.6 0.5	11.00 .09	51.0 0.3
30.0	7.96 .18	16.4 −0.2	5.31 .13	71.8 2.3	33.05 .14	11.2 0.7	11.11 .13	51.3 0.4
June 8.9	8.16 .23	16.3 0.0	5.46 .17	69.4 2.4	33.21 .18	12.0 0.8	11.27 .17	51.8 0.6
18.9	8.41 .26	16.4 +0.2	5.66 .21	67.1 2.4	33.41 .22	12.8 0.9	11.46 .21	52.4 0.7
28.9	8.69 .30	16.7 0.4	5.89 .24	64.7 2.3	33.64 .25	13.8 1.0	11.69 .25	53.2 0.8
July 8.9	9.00 .32	17.3 0.6	6.14 .27	62.4 2.2	33.91 .27	14.9 1.1	11.96 .27	54.1 0.9
18.8	9.34 .34	18.0 0.8	6.42 .29	60.2 2.1	34.19 .29	16.1 1.2	12.24 .29	55.1 1.0
28.8	9.69 .35	18.8 0.9	6.71 .30	58.2 1.8	34.49 .31	17.3 1.2	12.54 .31	56.1 1.0
Aug. 7.8	10.04 .35	19.9 1.1	7.02 .30	56.5 1.5	34.81 .31	18.5 1.2	12.86 .32	57.2 1.0
17.7	10.40 .35	21.0 1.2	7.32 .30	55.1 1.2	35.12 .32	19.6 1.1	13.18 .32	58.2 1.0
27.7	10.75 .34	22.2 1.2	7.62 .30	54.1 0.8	35.44 .31	20.7 1.0	13.50 .32	59.2 0.9
Sept. 6.7	11.09 .33	23.5 1.3	7.91 .29	53.4 −0.4	35.75 .30	21.6 0.9	13.82 .31	60.1 0.8
16.7	11.41 .31	24.8 1.3	8.20 .27	53.2 0.0	36.05 .29	22.4 0.7	14.13 .30	60.9 0.6
26.6	11.72 .29	26.1 1.3	8.46 .25	53.3 +0.3	36.33 .28	23.1 0.6	14.42 .29	61.6 0.5
Oct. 6.6	12.00 .27	27.3 1.2	8.70 .23	53.9 0.7	36.60 .26	23.6 0.4	14.70 .27	62.2 0.4
16.6	12.26 .24	28.5 1.2	8.92 .21	54.8 1.0	36.85 .24	24.0 0.3	14.97 .25	62.7 0.3
26.6	12.49 .22	29.7 1.2	9.11 .18	56.0 1.3	37.08 .21	24.2 +0.1	15.21 .23	63.0 0.2
Nov. 5.5	12.69 .18	30.9 1.1	9.28 .15	57.4 1.5	37.28 .19	24.3 0.0	15.42 .20	63.3 0.1
15.5	12.86 .15	31.9 1.0	9.41 .12	59.0 1.7	37.46 .16	24.3 0.0	15.61 .17	63.4 +0.1
25.5	12.99 .11	32.9 1.0	9.51 .08	60.8 1.8	37.60 .13	24.2 −0.1	15.77 .13	63.5 0.0
Dec. 5.4	13.08 .07	33.9 0.9	9.57 .05	62.5 1.7	37.71 .09	24.1 0.2	15.89 .10	63.6 0.0
15.4	13.12 +.03	34.7 0.8	9.60 +.01	64.3 1.7	37.78 .05	23.9 0.2	15.97 .06	636 0.0
25.4	13.13 −.02	35.4 0.6	9.59 −.03	65.9 1.5	37.81 +.01	23.7 0.2	16.01 +.02	63.6 0.0
35.4	13.09 −.06	36.0 +0.5	9.55 −.06	67.4 +1.3	37.80 −.03	23.4 −0.2	16.01 −.02	63.6 −0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (*Aldebaran.*)				*9 Camelopardalis.				ι Aurigæ.				11 Orionis.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*	
	h m 4 28		° ′ 16 15		h m 4 41		° ′ 66 7		h m 4 48		° ′ 32 57		h m 4 57		° ′ 15 13	
	s		″		s		″		s		″		s		″	
Jan. 0.4	38.28	.00	10.8	−0.2	27.21	−.07	34.2	+2.4	43.77	+.01	51.7	+0.8	19.12	+.02	34.1	−0.2
10.4	38.26	−.04	10.6	0.2	27.09	.17	36.5	2.1	43.76	−.03	52.5	0.7	19.12	−.02	33.8	0.2
20.4	38.19	.08	10.4	0.2	26.88	.26	38.5	1.8	43.70	.08	53.1	0.6	19.08	.06	33.6	0.2
30.3	38.09	.12	10.3	0.2	26.57	.34	40.1	1.4	43.60	.12	53.6	0.4	18.99	.10	33.5	0.2
Feb. 9.3	37.96	.14	10.1	0.2	26.20	.40	41.3	1.0	43.46	.16	53.9	0.3	18.87	.13	33.3	0.1
19.3	37.80	.16	9.9	0.2	25.78	.44	42.1	+0.5	43.28	.18	54.1	+0.1	18.73	.15	33.2	0.1
Mar. 1.2	37.64	.17	9.7	0.2	25.32	.46	42.3	0.0	43.09	.19	54.1	−0.1	18.57	.17	33.1	0.1
11.2	37.47	.16	9.5	0.2	24.86	.45	42.1	−0.5	42.89	.19	53.9	0.3	18.39	.17	33.0	0.1
21.2	37.31	.15	9.3	0.2	24.42	.42	41.4	0.9	42.70	.19	53.6	0.4	18.23	.16	32.9	−0.1
31.2	37.17	.13	9.2	−0.1	24.02	.37	40.2	1.3	42.52	.16	53.1	0.5	18.07	.14	32.8	0.0
Apr. 10.1	37.05	.10	9.1	0.0	23.68	.30	38.7	1.7	42.38	.13	52.5	0.6	17.94	.13	32.8	0.0
20.1	36.97	.06	9.1	0.0	23.41	.22	36.9	1.9	42.27	.09	51.9	0.7	17.84	.08	32.9	+0.1
30.1	36.93	−.02	9.2	+0.2	23.24	.12	34.8	2.1	42.20	−.04	51.2	0.7	17.78	−.04	33.0	0.2
May 10.1	36.94	+.03	9.4	0.3	23.17	−.02	32.6	2.2	42.19	+.01	50.5	0.7	17.76	.00	33.3	0.3
20.0	36.99	.08	9.7	0.4	23.20	+.08	30.4	2.2	42.23	.06	49.9	0.6	17.78	+.05	33.7	0.4
30.0	37.09	.12	10.2	0.5	23.33	.18	28.1	2.2	42.32	.12	49.3	0.5	17.85	.09	34.1	0.5
June 9.0	37.23	.17	10.8	0.7	23.56	.28	26.0	2.0	42.46	.17	48.9	0.4	17.97	.14	34.7	0.7
18.9	37.42	.20	11.6	0.8	23.89	.37	24.0	1.9	42.65	.21	48.6	0.2	18.13	.18	35.4	0.8
28.9	37.64	.24	12.5	0.9	24.31	.45	22.3	1.6	42.88	.25	48.5	−0.1	18.33	.21	36.2	0.8
July 8.9	37.89	.27	13.4	1.0	24.80	.52	20.8	1.3	43.15	.28	48.5	+0.1	18.56	.24	37.1	0.9
18.9	38.17	.29	14.5	1.1	25.35	.59	19.7	1.0	43.45	.31	48.7	0.2	18.81	.27	38.1	0.9
28.8	38.47	.30	15.5	1.1	25.96	.62	18.8	0.7	43.78	.33	48.9	0.4	19.09	.29	39.0	0.9
Aug. 7.8	38.78	.31	16.6	1.0	26.60	.66	18.3	−0.3	44.12	.35	49.4	0.5	19.39	.30	40.0	0.9
17.8	39.09	.32	17.6	1.0	27.27	.68	18.2	0.0	44.47	.36	49.9	0.6	19.69	.31	40.9	0.9
27.8	39.41	.31	18.6	0.9	27.96	.69	18.4	+0.4	44.83	.36	50.5	0.6	20.00	.31	41.7	0.8
Sept. 6.7	39.72	.31	19.5	0.8	28.64	.68	19.0	0.7	45.18	.35	51.2	0.7	20.32	.31	42.4	0.6
16.7	40.02	.30	20.2	0.7	29.32	.67	19.9	1.1	45.54	.35	52.0	0.7	20.63	.31	43.0	0.5
26.7	40.32	.29	20.8	0.5	29.98	.65	21.2	1.4	45.88	.34	52.7	0.8	20.93	.30	43.4	0.3
Oct. 6.6	40.60	.27	21.3	0.4	30.62	.61	22.7	1.7	46.21	.32	53.5	0.8	21.22	.29	43.7	0.2
16.6	40.86	.25	21.6	0.2	31.21	.57	24.6	2.0	46.53	.31	54.3	0.8	21.50	.27	43.8	+0.1
26.6	41.11	.23	21.8	+0.1	31.76	.52	26.7	2.2	46.82	.28	55.1	0.8	21.76	.25	43.8	−0.1
Nov. 5.6	41.33	.20	21.8	0.0	32.25	.45	29.0	2.4	47.10	.25	55.9	0.8	22.01	.23	43.7	0.2
15.5	41.52	.18	21.8	−0.1	32.67	.38	31.5	2.6	47.33	.22	56.8	0.8	22.22	.20	43.5	0.3
25.5	41.68	.14	21.7	0.1	33.00	.29	34.1	2.7	47.54	.19	57.6	0.8	22.41	.17	43.2	0.3
Dec. 5.5	41.80	.11	21.6	0.1	33.25	.20	36.8	2.7	47.71	.14	58.5	0.8	22.57	.13	42.9	0.3
15.5	41.89	.07	21.4	0.2	33.40	+.10	39.5	2.6	47.83	.10	59.3	0.8	22.68	.09	42.6	0.3
25.4	41.94	+.02	21.2	0.2	33.45	.00	42.1	2.5	47.90	+.05	60.1	0.8	22.76	.05	42.3	0.3
35.4	41.94	−.02	21.1	−0.2	33.40	−.10	44.6	+2.3	47.92	.00	60.9	+0.7	22.79	+.01	42.0	−0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Geminorum.		* Piazzi vii. 67.		α Geminorum. (*Castor.*)		α Canis Minoris. (*Procyon.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 12	° ′ 22 12	h m 7 17	° ′ 68 43	h m 7 26	° ′ 32 9	h m 7 32	° ′ 5 32
	s	″	s	″	s	″	s	″
Jan. 0.5	32.71 +.16	54.1 −0.2	40.92 +.33	17.2 +2.4	29.90 +.19	55.1 +0.4	39.69 +.16	58.7 −1.3
10.5	32.85 .11	54.0 0.0	41.18 .20	19.7 2.6	30.06 .14	55.6 0.6	39.83 .12	57.5 1.1
20.5	32.94 +.06	54.0 +0.1	41.32 +.07	22.4 2.6	30.17 .08	56.2 0.7	39.93 .07	56.4 1.0
30.5	32.97 .00	54.2 0.2	41.33 −.05	25.0 2.6	30.22 +.02	57.0 0.8	39.97 +.02	55.5 0.8
Feb. 9.4	32.95 −.05	54.5 0.3	41.22 .17	27.5 2.4	30.21 −.03	57.8 0.8	39.96 −.03	54.9 0.6
19.4	32.88 .09	54.8 0.4	40.99 .28	29.8 2.1	30.15 .08	58.7 0.8	39.90 .07	54.3 0.4
Mar. 1.4	32.77 .13	55.2 0.4	40.66 .37	31.8 1.8	30.04 .13	59.5 0.8	39.81 .11	54.0 0.3
11.3	32.62 .15	55.6 0.4	40.25 .44	33.4 1.4	29.90 .16	60.3 0.7	39.68 .14	53.8 −0.1
21.3	32.46 .17	56.0 0.3	39.78 .48	34.6 0.9	29.73 .18	60.9 0.6	39.54 .15	53.8 0.0
31.3	32.29 .17	56.3 0.3	39.29 .50	35.3 +0.5	29.54 .19	61.5 0.4	39.37 .16	53.9 +0.1
Apr. 10.3	32.12 .17	56.6 0.2	38.79 .49	35.5 0.0	29.35 .18	61.8 0.3	39.21 .16	54.1 0.3
20.2	31.96 .15	56.8 0.2	38.31 .46	35.2 −0.5	29.17 .17	62.0 +0.1	39.06 .15	54.4 0.4
30.2	31.82 .13	56.9 0.1	37.87 .41	34.5 1.0	29.01 .15	62.0 0.0	38.92 .13	54.8 0.4
May 10.2	31.71 .10	57.0 +0.1	37.49 .34	33.3 1.4	28.88 .12	61.9 −0.2	38.80 .10	55.3 0.5
20.2	31.63 .06	57.1 0.0	37.19 .26	31.8 1.7	28.78 .08	61.6 0.3	38.71 .07	55.9 0.6
30.1	31.58 −.02	57.1 0.0	36.97 .17	29.9 2.0	28.72 −.04	61.2 0.4	38.66 .04	56.5 0.7
June 9.1	31.58 +.02	57.1 0.0	36.85 −.07	27.7 2.2	28.70 .00	60.7 0.5	38.63 −.01	57.3 0.8
19.1	31.62 .06	57.0 0.0	36.83 +.03	25.4 2.4	28.72 +.04	60.1 0.6	38.65 +.03	58.0 0.8
29.0	31.70 .10	57.0 0.0	36.91 .13	22.9 2.5	28.79 .09	59.5 0.6	38.69 .06	58.9 0.8
July 9.0	31.81 .13	56.9 −0.1	37.10 .23	20.4 2.5	28.89 .13	58.8 0.7	38.77 .10	59.7 0.8
19.0	31.96 .17	56.9 0.1	37.37 .32	17.9 2.5	29.04 .16	58.1 0.7	38.89 .13	60.5 0.8
29.0	32.14 .20	56.8 0.1	37.74 .41	15.4 2.4	29.22 .20	57.4 0.7	39.03 .16	61.3 0.7
Aug. 7.9	32.35 .22	56.7 0.1	38.19 .49	13.0 2.3	29.43 .23	56.7 0.7	39.20 .18	61.9 0.6
17.9	32.59 .25	56.5 0.2	38.71 .56	10.8 2.1	29.68 .26	55.9 0.8	39.40 .21	62.5 0.5
27.9	32.85 .27	56.3 0.3	39.30 .62	8.8 1.9	29.95 .28	55.2 0.8	39.62 .23	62.9 0.3
Sept. 6.9	33.13 .29	56.0 0.3	39.95 .67	7.1 1.6	30.24 .31	54.4 0.8	39.86 .25	63.1 +0.1
16.8	33.43 .30	55.6 0.4	40.65 .72	5.6 1.3	30.56 .32	53.6 0.8	40.13 .27	63.1 −0.1
26.8	33.74 .32	55.1 0.5	41.39 .75	4.4 1.0	30.89 .34	52.8 0.8	40.41 .29	62.8 0.4
Oct. 6.8	34.07 .33	54.5 0.6	42.15 .77	3.5 0.7	31.24 .35	52.1 0.8	40.70 .30	62.3 0.6
16.7	34.40 .33	53.9 0.7	42.93 .78	3.1 −0.3	31.60 .36	51.3 0.7	41.00 .31	61.6 0.9
26.7	34.74 .34	53.2 0.7	43.72 .78	3.0 +0.1	31.97 .37	50.6 0.6	41.31 .31	60.6 1.1
Nov. 5.7	35.07 .33	52.5 0.7	44.49 .76	3.3 0.5	32.34 .37	50.0 0.6	41.63 .31	59.4 1.3
15.7	35.40 .32	51.8 0.7	45.24 .72	4.0 0.9	32.70 .35	49.5 0.4	41.93 .30	58.1 1.4
25.6	35.71 .30	51.2 0.6	45.94 .67	5.2 1.4	33.05 .34	49.1 0.3	42.23 .29	56.6 1.5
Dec. 5.6	36.00 .27	50.6 0.5	46.58 .60	6.8 1.7	33.37 .31	48.9 −0.1	42.51 .26	55.1 1.5
15.6	36.25 .24	50.1 0.4	47.13 .51	8.6 2.0	33.66 .27	48.9 +0.1	42.75 .23	53.6 1.5
25.6	36.47 .19	49.8 0.3	47.59 .40	10.8 2.3	33.92 .23	49.1 0.3	42.97 .19	52.2 1.4
35.5	36.64 +.14	49.6 −0.1	47.94 +.28	13.2 +2.5	34.12 +.18	49.5 +0.4	43.14 +.15	50.9 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Geminorum. (*Pollux.*)		φ Geminorum.		*3 Ursæ Majoris (H.)		15 Argus (ι.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	7h 37m	28° 19′	7h 45m	27° 5′	8h 0m	68° 50′	8h 2m	23° 56′
	s	″	s	″	s	″	s	″
Jan. 0.5	33.04 +.20	53.9 +0.1	43.88 +.20	35.1 0.0	10.99 +.43	39.0 +2.2	8.82 +.17	13.8 +2.8
10.5	33.21 .14	54.1 0.3	44.06 .15	35.2 +0.2	11.36 .31	41.3 2.4	8.96 .12	16.6 2.8
20.5	33.33 .09	54.4 0.5	44.18 .10	35.4 0.4	11.61 .19	43.8 2.6	9.06 .07	19.3 2.6
30.5	33.38 +.03	55.0 0.6	44.25 +.04	35.9 0.5	11.74 +.06	46.5 2.6	9.10 +.02	21.8 2.4
Feb. 9.4	33.38 −.02	55.6 0.7	44.26 −.01	36.4 0.6	11.73 −.07	49.1 2.6	9.09 −.03	24.1 2.2
19.4	33.34 .07	56.3 0.7	44.22 .06	37.1 0.7	11.59 .19	51.6 2.4	9.03 .08	26.2 1.9
Mar. 1.4	33.24 .12	57.0 0.7	44.13 .11	37.7 0.7	11.35 .29	54.0 2.2	8.93 .12	27.9 1.5
11.3	33.10 .15	57.7 0.6	44.01 .14	38.4 0.6	11.01 .38	56.0 1.8	8.79 .15	29.2 1.2
21.3	32.94 .17	58.3 0.6	43.85 .16	39.0 0.6	10.60 .44	57.7 1.4	8.63 .17	30.2 0.8
31.3	32.77 .18	58.8 0.5	43.69 .17	39.6 0.5	10.13 .48	58.9 1.0	8.45 .18	30.8 0.4
Apr. 10.3	32.59 .18	59.2 0.3	43.51 .17	40.0 0.4	9.64 .49	59.6 +0.5	8.26 .19	31.1 +0.1
20.2	32.41 .16	59.5 0.2	43.34 .16	40.3 0.3	9.15 .48	59.8 0.0	8.08 .18	31.0 −0.3
30.2	32.26 .14	59.6 +0.1	43.19 .14	40.5 +0.1	8.68 .45	59.6 −0.5	7.90 .17	30.6 0.6
May 10.2	32.12 .12	59.7 0.0	43.05 .12	40.6 0.0	8.25 .40	58.9 0.9	7.74 .15	29.8 1.0
20.2	32.02 .08	59.5 −0.2	42.95 .08	40.6 −0.1	7.89 .33	57.7 1.4	7.60 .12	28.7 1.3
30.1	31.96 .04	59.3 0.2	42.88 .05	40.4 0.2	7.59 .25	56.1 1.7	7.50 .09	27.3 1.5
June 9.1	31.93 −.01	59.0 0.3	42.85 −.01	40.2 0.3	7.38 .16	54.2 2.0	7.42 .06	25.6 1.8
19.1	31.95 +.03	58.7 0.4	42.86 +.03	39.9 0.3	7.26 −.07	52.0 2.3	7.38 −.03	23.7 2.0
29.0	32.00 .07	58.2 0.4	42.91 .07	39.6 0.4	7.24 +.02	49.6 2.5	7.37 +.01	21.7 2.1
July 9.0	32.10 .11	57.8 0.5	42.99 .10	39.1 0.4	7.31 .12	47.1 2.6	7.39 .04	19.5 2.2
19.0	32.23 .15	57.3 0.5	43.12 .14	38.7 0.5	7.48 .21	44.4 2.7	7.45 .08	17.3 2.2
29.0	32.39 .18	56.7 0.6	43.27 .17	38.2 0.5	7.73 .30	41.7 2.7	7.54 .11	15.1 2.2
Aug. 7.9	32.58 .21	56.1 0.6	43.46 .20	37.6 0.6	8.08 .39	39.1 2.6	7.67 .14	13.0 2.0
17.9	32.81 .24	55.5 0.6	43.67 .23	37.0 0.6	8.51 .46	36.5 2.5	7.83 .17	11.0 1.8
27.9	33.06 .26	54.8 0.7	43.92 .26	36.3 0.7	9.01 .54	34.0 2.4	8.02 .20	9.3 1.5
Sept. 6.9	33.34 .29	54.1 0.7	44.18 .28	35.6 0.8	9.58 .60	31.7 2.2	8.24 .23	7.9 1.2
16.8	33.64 .31	53.4 0.8	44.47 .30	34.8 0.8	10.22 .66	29.7 1.9	8.49 .26	6.9 0.8
26.8	33.95 .32	52.6 0.8	44.79 .32	34.0 0.9	10.90 .71	27.9 1.6	8.76 .28	6.3 −0.3
Oct. 6.8	34.29 .34	51.7 0.8	45.11 .33	33.1 0.9	11.63 .75	26.4 1.3	9.05 .30	6.2 +0.1
16.7	34.63 .35	50.9 0.8	45.45 .35	32.2 0.9	12.40 .77	25.2 0.9	9.36 .31	6.6 0.6
26.7	34.99 .35	50.1 0.8	45.81 .35	31.3 0.9	13.18 .79	24.5 0.6	9.67 .32	7.5 1.1
Nov. 5.7	35.34 .35	49.3 0.7	46.16 .35	30.4 0.9	13.97 .79	24.1 −0.1	10.00 .32	8.8 1.6
15.7	35.69 .35	48.6 0.7	46.51 .35	29.6 0.8	14.75 .77	24.2 +0.3	10.32 .32	10.7 2.0
25.6	36.03 .33	48.0 0.5	46.86 .33	28.9 0.6	15.51 .73	24.8 0.8	10.63 .30	12.8 2.3
Dec. 5.6	36.35 .30	47.5 0.4	47.18 .31	28.3 0.5	16.21 .67	25.7 1.2	10.92 .28	15.3 2.6
15.6	36.64 .27	47.2 −0.2	47.47 .27	27.9 0.3	16.85 .60	27.1 1.6	11.18 .24	18.0 2.8
25.6	36.89 .23	47.1 0.0	47.73 .23	27.6 −0.1	17.40 .50	28.9 2.0	11.40 .20	20.8 2.8
35.5	37.10 +.18	47.2 +0.2	47.94 +.19	27.6 +0.1	17.85 +.39	31.1 +2.3	11.58 +.15	23.7 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		*22 Camelopardalis.		μ Geminorum.		α Argus. (*Canopus.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 5 48	° ′ 7 22	h m 6 4	° ′ 69 21	h m 6 15	° ′ 22 34	h m 6 21	° ′ 52 37
	s	″	s	″	s	″	s	″
Jan. 0.5	18.22 +.06	55.6 −0.8	52.63 +.13	43.1 +2.7	17.10 +.10	39.4 0.0	9.89 +.01	35.4 +3.4
10.5	18.26 +.02	54.8 0.7	52.70 +.01	45.8 2.6	17.17 +.05	39.5 +0.1	9.86 −.06	38.7 3.2
20.4	18.25 −.03	54.2 0.6	52.64 −.12	48.4 2.5	17.20 .00	39.7 0.2	9.76 .13	41.8 2.9
30.4	18.21 .07	53.6 0.5	52.46 .24	50.7 2.2	17.18 −.05	39.9 0.2	9.59 .19	44.6 2.6
Feb. 9.4	18.12 .11	53.2 0.3	52.17 .34	52.8 1.9	17.11 .09	40.2 0.3	9.37 .25	47.0 2.2
19.3	17.99 .14	53.0 0.2	51.78 .42	54.5 1.5	16.99 .13	40.4 0.3	9.09 .30	48.9 1.7
Mar. 1.3	17.84 .16	52.8 −0.1	51.32 .48	55.8 1.0	16.85 .16	40.7 0.2	8.78 .33	50.3 1.2
11.3	17.68 .17	52.7 0.0	50.82 .52	56.6 0.5	16.68 .17	40.9 0.2	8.43 .35	51.3 0.7
21.3	17.51 .17	52.7 +0.1	50.29 .53	56.9 +0.1	16.50 .18	41.0 0.1	8.07 .36	51.7 +0.1
31.2	17.34 .16	52.9 0.2	49.76 .51	56.8 −0.4	16.32 .17	41.1 +0.1	7.72 .35	51.6 −0.4
Apr. 10.2	17.19 .14	53.1 0.3	49.27 .47	56.1 0.9	16.15 .16	41.2 0.0	7.37 .33	50.9 0.9
20.2	17.06 .11	53.5 0.4	48.83 .40	55.0 1.3	16.01 .13	41.2 0.0	7.05 .31	49.8 1.4
30.2	16.96 .08	53.9 0.5	48.46 .32	53.5 1.7	15.90 .10	41.1 0.0	6.76 .27	48.2 1.8
May 10.1	16.90 −.04	54.5 0.6	48.19 .22	51.6 2.0	15.81 .06	41.1 −0.1	6.51 .22	46.2 2.2
20.1	16.88 .00	55.2 0.7	48.01 .12	49.5 2.2	15.78 −.02	41.0 0.0	6.31 .17	43.8 2.6
30.1	16.90 +.04	56.0 0.9	47.95 −.01	47.3 2.3	15.78 +.03	41.0 0.0	6.17 .11	41.1 2.9
June 9.0	16.97 .08	56.9 0.9	48.00 +.10	44.9 2.4	15.83 .07	41.0 0.0	6.08 −.05	38.1 3.1
19.0	17.07 .12	57.9 1.0	48.16 .22	42.5 2.4	15.92 .11	41.0 +0.1	6.06 +.01	34.9 3.2
29.0	17.22 .16	58.9 1.1	48.43 .32	40.1 2.3	16.05 .15	41.1 0.1	6.10 .07	31.6 3.3
July 9.0	17.40 .19	60.0 1.1	48.80 .41	37.8 2.2	16.22 .19	41.2 0.1	6.20 .13	28.2 3.3
18.9	17.61 .22	61.2 1.1	49.26 .50	35.7 2.0	16.43 .22	41.3 0.2	● 6.35 .18	25.0 3.2
28.9	17.84 .25	62.2 1.0	49.80 .58	33.8 1.8	16.67 .25	41.5 0.2	6.56 .22	21.9 3.0
Aug. 7.9	18.10 .26	63.2 0.9	50.42 .64	32.2 1.5	16.92 .27	41.7 0.2	6.82 .28	19.0 2.6
17.9	18.37 .28	64.1 0.8	51.09 .70	30.8 1.2	17.21 .29	41.9 0.1	7.13 .32	16.6 2.2
27.8	18.65 .29	64.8 0.6	51.81 .74	29.7 0.9	17.50 .30	42.0 0.1	7.47 .36	14.6 1.8
Sept. 6.8	18.95 .30	65.4 0.4	52.57 .77	29.0 0.6	17.81 .32	42.1 +0.1	7.84 .38	13.1 1.3
16.8	19.25 .30	65.7 +0.2	53.36 .79	28.6 −0.2	18.13 .32	42.1 0.0	8.23 .40	12.1 −0.6
26.7	19.55 .30	65.8 0.0	54.15 .80	28.5 +0.1	18.46 .33	42.1 −0.1	8.64 .41	11.8 0.0
Oct. 6.7	19.85 .30	65.7 −0.2	54.95 .79	28.9 0.5	18.79 .33	41.9 0.2	9.05 .41	12.1 +0.7
16.7	20.14 .29	65.4 0.4	55.73 .77	29.5 0.9	19.12 .32	41.7 0.2	9.46 .40	13.1 1.3
26.7	20.43 .28	64.9 0.6	56.49 .74	30.6 1.2	19.44 .32	41.5 0.3	9.85 .38	14.7 1.9
Nov. 5.6	20.70 .26	64.2 0.8	57.21 .69	32.0 1.6	19.75 .30	41.2 0.3	10.21 .34	16.9 2.4
15.6	20.95 .24	63.3 0.9	57.86 .62	33.7 1.9	20.04 .28	40.9 0.3	10.53 .30	19.5 2.8
25.6	21.17 .21	62.4 0.9	58.45 .54	35.8 2.2	20.31 .25	40.7 0.2	10.81 .25	22.5 3.2
Dec. 5.6	21.37 .18	61.5 1.0	58.95 .45	38.1 2.4	20.55 .22	40.5 0.2	11.03 .19	25.8 3.4
15.5	21.53 .14	60.5 0.9	59.34 .34	40.6 2.6	20.76 .18	40.3 −0.1	11.19 .12	29.3 3.5
25.5	21.64 .10	59.6 0.9	59.62 .22	43.2 2.6	20.92 .13	40.3 0.0	11.28 +.05	32.8 3.5
35.5	21.72 +.05	58.8 −0.8	59.78 +.09	45.9 +2.7	21.03 +.09	40.3 0.0	11.30 −.02	36.3 +3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Argus.		*1 Draconis.		α Hydræ.		*d Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	$9^{h}\ 13^{m}$	$58^{\circ}\ 44'$	$9^{h}\ 18^{m}$	$81^{\circ}\ 52'$	$9^{h}\ 21^{m}$	$8^{\circ}\ 6'$	$9^{h}\ 23^{m}$	$70^{\circ}\ 22'$
	s	″	s	″	s	″	s	″
Jan. 0.6	42.62 +.31	14.9 +3.5	53.95+1.35	58.3 +1.9	20.98 +.25	25.4 +2.3	14.78 +.64	64.4 +1.5
10.6	42.89 .23	18.5 3.7	55.19 1.11	60.5 2.3	21.21 .21	27.7 2.2	15.37 .54	66.1 1.9
20.6	43.07 .14	22.3 3.8	56.18 .84	63.0 2.7	21.40 .16	29.8 2.0	15.85 .42	68.2 2.3
30.5	43.18 +.06	26.1 3.8	56.87 .53	65.9 2.9	21.54 .11	31.7 1.8	16.20 .28	70.7 2.5
Feb. 9.5	43.20 −.02	29.8 3.6	57.24+ .22	68.9 3.0	21.63 .06	33.5 1.6	16.42 .15	73.3 2.7
19.5	43.14 .10	33.4 3.5	57.30− .09	72.0 3.0	21.67 +.02	35.0 1.4	16.49 +.01	76.1 2.8
Mar. 1.4	43.00 .17	36.7 3.2	57.06 .39	75.0 2.9	21.66 −.03	36.2 1.1	16.44 −.12	78.8 2.7
11.4	42.80 .23	39.7 2.8	56.53 .66	77.8 2.7	21.61 .06	37.2 0.9	16.26 .23	81.5 2.5
21.4	42.54 .28	42.4 2.4	55.74 .89	80.3 2.3	21.53 .10	37.9 0.6	15.97 .33	83.9 2.2
31.4	42.24 .32	44.6 2.0	54.74 1.08	82.4 1.9	21.42 .12	38.4 0.4	15.59 .41	85.9 1.9
Apr. 10.3	41.91 .35	46.4 1.5	53.58 1.21	84.1 1.4	21.29 .13	38.7 +0.1	15.15 .47	87.6 1.5
20.3	41.55 .36	47.7 1.0	52.31 1.29	85.2 0.8	21.16 .14	38.7 −0.1	14.66 .50	88.9 1.0
30.3	41.18 .37	48.5 +0.5	50.99 1.33	85.8 +0.3	21.02 .14	38.5 0.3	14.15 .51	89.6 +0.5
May 10.3	40.82 .36	48.7 0.0	49.67 1.30	85.8 −0.3	20.89 .13	38.2 0.5	13.64 .50	89.8 0.0
20.2	40.46 .35	48.5 −0.5	48.39 1.23	85.2 0.8	20.76 .12	37.6 0.7	13.16 .46	89.6 −0.5
30.2	40.13 .32	47.8 1.0	47.21 1.12	84.1 1.4	20.65 .10	36.8 0.8	12.71 .42	88.8 1.0
June 9.2	39.82 .29	46.5 1.5	46.17 .97	82.5 1.8	20.57 .08	36.0 1.0	12.32 .35	87.5 1.5
19.1	39.55 .25	44.8 1.9	45.29 .79	80.5 2.3	20.50 .06	34.9 1.1	12.01 .28	85.8 1.9
29.1	39.32 .20	42.7 2.3	44.60 .58	78.0 2.6	20.45 −.03	33.8 1.2	11.77 .20	83.8 2.2
July 9.1	39.14 .15	40.3 2.6	44.12 .37	75.2 2.9	20.44 −.01	32.6 1.2	11.61 .11	81.4 2.5
19.1	39.01 .10	37.6 2.8	43.86 −.14	72.2 3.1	20.44 +.02	31.4 1.2	11.55 −.02	78.8 2.8
29.0	38.94 −.04	34.7 3.0	43.83 +.09	68.9 3.3	20.48 .05	30.2 1.2	11.58 +.07	75.9 2.9
Aug. 8.0	38.94 +.03	31.7 3.0	44.04 .32	65.6 3.4	20.54 .08	29.0 1.1	11.69 .17	72.9 3.0
18.0	39.00 .09	28.7 3.0	44.47 .55	62.2 3.4	20.63 .10	28.0 1.0	11.91 .26	69.8 3.1
28.0	39.12 .16	25.8 2.8	45.13 .77	58.8 3.3	20.75 .13	27.1 0.8	12.21 .35	66.7 3.1
Sept. 6.9	39.32 .23	23.0 2.5	46.00 .98	55.5 3.2	20.90 .16	26.4 0.5	12.60 .43	63.6 3.0
16.9	39.58 .29	20.7 2.2	47.08 1.17	52.3 3.0	21.08 .19	26.0 −0.3	13.08 .52	60.6 2.9
26.9	39.90 .35	18.7 1.7	48.35 1.35	49.4 2.8	21.29 .22	25.9 +0.1	13.63 .59	57.8 2.7
Oct. 6.8	40.28 .40	17.2 1.2	49.79 1.51	46.8 2.5	21.53 .25	26.1 0.4	14.26 .66	55.1 2.5
16.8	40.71 .44	16.3 −0.6	51.37 1.65	44.5 2.1	21.79 .28	26.7 0.8	14.96 .72	52.8 2.2
26.8	41.17 .48	16.0 0.0	53.08 1.75	42.6 1.6	22.08 .30	27.7 1.1	15.71 .78	50.8 1.8
Nov. 5.8	41.66 .49	16.4 +0.7	54.87 1.89	41.2 1.2	22.39 .32	28.9 1.4	16.51 .81	49.2 1.4
15.7	42.16 .50	17.4 1.3	56.72 1.85	40.3 0.6	22.71 .33	30.5 1.7	17.33 .83	48.0 0.9
25.7	42.66 .48	19.1 1.9	58.57 1.84	40.0 −0.1	23.04 .33	32.4 2.0	18.17 .83	47.4 −0.4
Dec. 5.7	43.13 .45	21.3 2.5	60.38 1.77	40.2 +0.5	23.36 .32	34.5 2.1	18.99 .81	47.2 +0.1
15.7	43.56 .41	24.1 3.0	62.10 1.65	41.0 1.1	23.67 .30	36.7 2.3	19.79 .76	47.6 0.6
25.6	43.94 .35	27.2 3.3	63.68 1.48	42.3 1.5	23.96 .27	39.0 2.3	20.52 .70	48.5 1.1
35.6	44.25 +.27	30.7 +3.6	65.07+1.28	44.2 +1.9	24.22 +.24	41.3 +2.2	21.17 +.61	49.9 +1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Geminorum.		* Piazzi vii. 67.		α Geminorum. (*Castor.*)		α Canis Minoris. (*Procyon.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 12	° ′ 22 12	h m 7 17	° ′ 68 43	h m 7 26	° ′ 32 9	h m 7 32	° ′ 5 32
	s	″	s	″	s	″	s	″
Jan. 0.5	32.71 +.16	54.1 −0.2	40.92 +.33	17.2 +2.4	29.90 +.19	55.1 +0.4	39.69 +.16	58.7 −1.3
10.5	32.85 .11	54.0 0.0	41.18 .20	19.7 2.6	30.06 .14	55.6 0.6	39.83 .12	57.5 1.1
20.5	32.94 +.06	54.0 +0.1	41.32 +.07	22.4 2.6	30.17 .08	56.2 0.7	39.93 .07	56.4 1.0
30.5	32.97 .00	54.2 0.2	41.33 −.05	25.0 2.6	30.22 +.02	57.0 0.8	39.97 +.02	55.5 0.8
Feb. 9.4	32.95 −.05	54.5 0.3	41.22 .17	27.5 2.4	30.21 −.03	57.8 0.8	39.96 −.03	54.9 0.6
19.4	32.88 .09	54.8 0.4	40.99 .28	29.8 2.1	30.15 .08	58.7 0.8	39.90 .07	54.3 0.4
Mar. 1.4	32.77 .13	55.2 0.4	40.66 .37	31.8 1.8	30.04 .13	59.5 0.8	39.81 .11	54.0 0.3
11.3	32.62 .15	55.6 0.4	40.25 .44	33.4 1.4	29.90 .16	60.3 0.7	39.68 .14	53.8 −0.1
21.3	32.46 .17	56.0 0.3	39.78 .48	34.6 0.9	29.73 .18	60.9 0.6	39.54 .15	53.8 0.0
31.3	32.29 .17	56.3 0.3	39.29 .50	35.3 +0.5	29.54 .19	61.5 0.4	39.37 .16	53.9 +0.1
Apr. 10.3	32.12 .17	56.6 0.2	38.79 .49	35.5 0.0	29.35 .18	61.8 0.3	39.21 .16	54.1 0.3
20.2	31.96 .15	56.8 0.2	38.31 .46	35.2 −0.5	29.17 .17	62.0 +0.1	39.06 .15	54.4 0.4
30.2	31.82 .13	56.9 0.1	37.87 .41	34.5 1.0	29.01 .15	62.0 0.0	38.92 .13	54.8 0.4
May 10.2	31.71 .10	57.0 +0.1	37.49 .34	33.3 1.4	28.88 .12	61.9 −0.2	38.80 .10	55.3 0.5
20.2	31.63 .06	57.1 0.0	37.19 .26	31.8 1.7	28.78 .08	61.6 0.3	38.71 .07	55.9 0.6
30.1	31.58 −.02	57.1 0.0	36.97 .17	29.9 2.0	28.72 −.04	61.2 0.4	38.66 .04	56.5 0.7
June 9.1	31.58 +.02	57.1 0.0	36.85 −.07	27.7 2.2	28.70 .00	60.7 0.5	38.63 −.01	57.3 0.8
19.1	31.62 .06	57.0 0.0	36.83 +.03	25.4 2.4	28.72 +.04	60.1 0.6	38.65 +.03	58.0 0.8
29.0	31.70 .10	57.0 0.0	36.91 .13	22.9 2.5	28.79 .09	59.5 0.6	38.69 .06	58.9 0.8
July 9.0	31.81 .13	56.9 −0.1	37.10 .23	20.4 2.5	28.89 .13	58.8 0.7	38.77 .10	59.7 0.8
19.0	31.96 .17	56.9 0.1	37.37 .32	17.9 2.5	29.04 .16	58.1 0.7	38.89 .13	60.5 0.8
29.0	32.14 .20	56.8 0.1	37.74 .41	15.4 2.4	29.22 .20	57.4 0.7	39.03 .16	61.3 0.7
Aug. 7.9	32.35 .22	56.7 0.1	38.19 .49	13.0 2.3	29.43 .23	56.7 0.7	39.20 .18	61.9 0.6
17.9	32.59 .25	56.5 0.2	38.71 .56	10.8 2.1	29.68 .26	55.9 0.8	39.40 .21	62.5 0.5
27.9	32.85 .27	56.3 0.3	39.30 .62	8.8 1.9	29.95 .28	55.2 0.8	39.62 .23	62.9 0.3
Sept. 6.9	33.13 .29	56.0 0.3	39.95 .67	7.1 1.6	30.24 .31	54.4 0.8	39.86 .25	63.1 +0.1
16.8	33.43 .30	55.6 0.4	40.65 .72	5.6 1.3	30.56 .32	53.6 0.8	40.13 .27	63.1 −0.1
26.8	33.74 .32	55.1 0.5	41.39 .75	4.4 1.0	30.89 .34	52.8 0.8	40.41 .29	62.8 0.4
Oct. 6.8	34.07 .33	54.5 0.6	42.15 .77	3.5 0.7	31.24 .35	52.1 0.8	40.70 .30	62.3 0.6
16.7	34.40 .33	53.9 0.7	42.93 .78	3.1 −0.3	31.60 .36	51.3 0.7	41.00 .31	61.6 0.9
26.7	34.74 .34	53.2 0.7	43.72 .78	3.0 +0.1	31.97 .37	50.6 0.6	41.31 .31	60.6 1.1
Nov. 5.7	35.07 .33	52.5 0.7	44.49 .76	3.3 0.5	32.34 .37	50.0 0.6	41.63 .31	59.4 1.3
15.7	35.40 .32	51.8 0.7	45.24 .72	4.0 0.9	32.70 .35	49.5 0.4	41.93 .30	58.1 1.4
25.6	35.71 .30	51.2 0.6	45.94 .67	5.2 1.4	33.05 .34	49.1 0.3	42.23 .29	56.6 1.5
Dec. 5.6	36.00 .27	50.6 0.5	46.58 .60	6.8 1.7	33.37 .31	48.9 −0.1	42.51 .26	55.1 1.5
15.6	36.25 .24	50.1 0.4	47.13 .51	8.6 2.0	33.66 .27	48.9 +0.1	42.75 .23	53.6 1.5
25.6	36.47 .19	49.8 0.3	47.59 .40	10.8 2.3	33.92 .23	49.1 0.3	42.97 .19	52.2 1.4
35.5	36.64 +.14	49.6 −0.1	47.94 +.28	13.2 +2.5	34.12 +.18	49.5 +0.4	43.14 +.15	50.9 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Geminorum. (*Pollux.*)		ϕ Geminorum.		*3 Ursæ Majoris (H.)		15 Argus (ι.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	7h 37m	28° 19′	7h 45m	27° 5′	8h 0m	68° 50′	8h 2m	23° 56′
	s	″	s	″	s	″	s	″
Jan. 0.5	33.04 +.20	53.9 +0.1	43.88 +.20	35.1 0.0	10.99 +.43	39.0 +2.2	8.82 +.17	13.8 +2.8
10.5	33.21 .14	54.1 0.3	44.06 .15	35.2 +0.2	11.36 .31	41.3 2.4	8.96 .12	16.6 2.8
20.5	33.33 .09	54.4 0.5	44.18 .10	35.4 0.4	11.61 .19	43.8 2.6	9.06 .07	19.3 2.6
30.5	33.38 +.03	55.0 0.6	44.25 +.04	35.9 0.5	11.74 +.06	46.5 2.6	9.10 +.02	21.8 2.4
Feb. 9.4	33.38 −.02	55.6 0.7	44.26 −.01	36.4 0.6	11.73 −.07	49.1 2.6	9.09 −.03	24.1 2.2
19.4	33.34 .07	56.3 0.7	44.22 .06	37.1 0.7	11.59 .19	51.6 2.4	9.03 .06	26.2 1.9
Mar. 1.4	33.24 .12	57.0 0.7	44.13 .11	37.7 0.7	11.35 .29	54.0 2.2	8.93 .12	27.9 1.5
11.3	33.10 .15	57.7 0.6	44.01 .14	38.4 0.6	11.01 .38	56.0 1.8	8.79 .15	29.2 1.2
21.3	32.94 .17	58.3 0.6	43.85 .16	39.0 0.6	10.60 .44	57.7 1.4	8.63 .17	30.2 0.8
31.3	32.77 .18	58.8 0.5	43.69 .17	39.6 0.5	10.13 .48	58.9 1.0	8.45 .18	30.8 0.4
Apr. 10.3	32.59 .18	59.2 0.3	43.51 .17	40.0 0.4	9.64 .49	59.6 +0.5	8.26 .19	31.1 +0.1
20.2	32.41 .16	59.5 0.2	43.34 .16	40.3 0.3	9.15 .48	59.8 0.0	8.08 .18	31.0 −0.3
30.2	32.26 .14	59.6 +0.1	43.19 .14	40.5 +0.1	8.68 .45	59.6 −0.5	7.90 .17	30.6 0.6
May 10.2	32.12 .12	59.7 0.0	43.05 .12	40.6 0.0	8.25 .40	58.9 0.9	7.74 .15	29.8 1.0
20.2	32.02 .08	59.5 −0.2	42.95 .08	40.6 −0.1	7.89 .33	57.7 1.4	7.60 .12	28.7 1.3
30.1	31.96 .04	59.3 0.2	42.88 .05	40.4 0.2	7.59 .25	56.1 1.7	7.50 .09	27.3 1.5
June 9.1	31.93 −.01	59.0 0.3	42.85 −.01	40.2 0.3	7.38 .16	54.2 2.0	7.42 .06	25.6 1.8
19.1	31.95 +.03	58.7 0.4	42.86 +.03	39.9 0.3	7.26 −.07	52.0 2.3	7.38 −.03	23.7 2.0
29.0	32.00 .07	58.2 0.4	42.91 .07	39.6 0.4	7.24 +.02	49.6 2.5	7.37 +.01	21.7 2.1
July 9.0	32.10 .11	57.8 0.5	42.99 .10	39.1 0.4	7.31 .12	47.1 2.6	7.39 .04	19.5 2.2
19.0	32.23 .15	57.3 0.5	43.12 .14	38.7 0.5	7.48 .21	44.4 2.7	7.45 .08	17.3 2.2
29.0	32.39 .18	56.7 0.6	43.27 .17	38.2 0.5	7.73 .30	41.7 2.7	7.54 .11	15.1 2.2
Aug. 7.9	32.58 .21	56.1 0.6	43.46 .20	37.6 0.6	8.08 .29	39.1 2.6	7.67 .14	13.0 2.0
17.9	32.81 .24	55.5 0.6	43.67 .23	37.0 0.6	8.51 .46	36.5 2.5	7.83 .17	11.0 1.8
27.9	33.06 .26	54.8 0.7	43.92 .26	36.3 0.7	9.01 .54	34.0 2.4	8.02 .20	9.3 1.5
Sept. 6.9	33.34 .29	54.1 0.7	44.18 .28	35.6 0.8	9.58 .60	31.7 2.2	8.24 .23	7.9 1.2
16.8	33.64 .31	53.4 0.8	44.47 .30	34.8 0.8	10.22 .66	29.7 1.9	8.49 .26	6.9 0.8
26.8	33.95 .32	52.6 0.8	44.79 .32	34.0 0.9	10.90 .71	27.9 1.6	8.76 .28	6.3 −0.3
Oct. 6.8	34.29 .34	51.7 0.8	45.11 .33	33.1 0.9	11.63 .75	26.4 1.3	9.05 .30	6.2 +0.1
16.7	34.63 .35	50.9 0.8	45.45 .35	32.2 0.9	12.40 .77	25.2 0.9	9.36 .31	6.6 0.6
26.7	34.99 .35	50.1 0.8	45.81 .35	31.3 0.9	13.18 .79	24.5 0.6	9.67 .32	7.5 1.1
Nov. 5.7	35.34 .35	49.3 0.7	46.16 .35	30.4 0.9	13.97 .79	24.1 −0.1	10.00 .32	8.8 1.6
15.7	35.69 .35	48.6 0.7	46.51 .35	29.6 0.8	14.75 .77	24.2 +0.3	10.32 .32	10.7 2.0
25.6	36.03 .33	48.0 0.5	46.86 .33	28.9 0.6	15.51 .73	24.8 0.8	10.63 .30	12.8 2.3
Dec. 5.6	36.35 .30	47.5 0.4	47.18 .31	28.3 0.5	16.21 .67	25.7 1.2	10.92 .28	15.3 2.6
15.6	36.64 .27	47.2 −0.2	47.47 .27	27.9 0.3	16.85 .60	27.1 1.6	11.18 .24	18.0 2.8
25.6	36.89 .23	47.1 0.0	47.73 .23	27.6 −0.1	17.40 .50	28.9 2.0	11.40 .20	20.8 2.8
35.5	37.10 +.18	47.2 +0.2	47.94 +.19	27.6 +0.1	17.85 +.39	31.1 +2.3	11.58 +.15	23.7 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Argus.		ι Leonis.		α Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 10 40	° ′ 59 0	h m 10 42	° ′ 11 12	h m 10 55	° ′ 62 25	h m 11 7	° ′ 21 12
	s	″	s	″	s	″	s	″
Jan. 0.7	8.54 +.44	38.0 +2.9	34.64 +.32	62.5 −1.7	53.02 +.59	59.0 0.0	20.93 +.34	68.0 −1.5
10.6	8.95 .38	41.1 3.3	34.95 .28	60.9 1.5	53.58 .53	59.3 +0.6	21.26 .31	66.7 1.2
20.6	9.30 .31	44.5 3.5	35.21 .25	59.5 1.2	54.09 .47	60.2 1.1	21.55 .28	65.6 0.9
30.6	9.58 .24	48.1 3.7	35.44 .20	58.5 0.9	54.53 .39	61.6 1.6	21.81 .24	64.9 0.5
Feb. 9.6	9.78 .16	51.8 3.7	35.62 .16	57.7 0.6	54.88 .31	63.4 2.0	22.03 .19	64.6 −0.1
19.5	9.90 .08	55.6 3.7	35.76 .11	57.2 .04	55.14 .21	65.7 2.3	22.19 .14	64.7 +0.2
Mar. 1.5	9.94 +.01	59.3 3.6	35.84 .06	56.9 −0.1	55.30 .11	68.1 2.5	22.31 .09	65.0 0.5
11.5	9.91 −.06	62.8 3.4	35.88 +.02	56.9 +0.1	55.36 +.02	70.7 2.6	22.38 +.04	65.6 0.7
21.5	9.82 .12	66.1 3.1	35.88 −.02	57.2 0.3	55.34 −.07	73.4 2.6	22.40 .00	66.4 0.9
31.4	9.67 .18	69.1 2.8	35.84 .05	57.6 0.5	55.23 .14	75.9 2.5	22.39 −.03	67.3 1.0
Apr. 10.4	9.46 .23	71.7 2.5	35.78 .08	58.1 0.6	55.05 .21	78.3 2.3	22.34 .06	68.4 1.1
20.4	9.21 .26	74.0 2.0	35.69 .09	58.7 0.6	54.81 .26	80.4 1.9	22.26 .08	69.4 1.1
30.3	8.94 .29	75.8 1.6	35.59 .10	59.4 0.7	54.53 .30	82.2 1.6	22.17 .10	70.5 1.0
May 10.3	8.64 .31	77.2 1.1	35.48 .11	60.0 0.6	54.22 .32	83.6 1.1	22.06 .11	71.5 0.9
20.3	8.32 .32	78.1 0.6	35.37 .11	60.7 0.6	53.89 .33	84.5 0.7	21.95 .11	72.3 0.8
30.3	7.99 .32	78.4 +0.1	35.26 .10	61.3 0.6	53.56 .33	84.9 +0.2	21.84 .11	73.1 0.7
June 9.2	7.68 .31	78.3 −0.4	35.16 .09	61.8 0.5	53.24 .31	84.9 −0.3	21.73 .11	73.7 0.5
19.2	7.37 .30	77.7 0.9	35.07 .08	62.3 0.4	52.94 .29	84.3 0.8	21.63 .10	74.1 0.3
29.2	7.07 .28	76.6 1.3	35.00 .07	62.7 0.4	52.66 .25	83.3 1.2	21.53 .09	74.3 +0.1
July 9.2	6.81 .25	75.0 1.7	34.93 .05	63.1 0.3	52.43 .21	81.9 1.6	21.45 .07	74.3 −0.1
19.1	6.57 .21	73.1 2.1	34.89 .03	63.3 +0.1	52.24 .17	80.0 2.0	21.39 .05	74.1 0.3
29.1	6.38 .17	70.9 2.4	34.87 −.01	63.3 0.0	52.09 .12	77.8 2.4	21.34 .04	73.8 0.5
Aug. 8.1	6.24 .11	68.3 2.6	34.87 +.01	63.3 −0.1	52.00 .06	75.3 2.7	21.32 −.01	73.2 0.7
18.0	6.16 −.05	65.6 2.8	34.89 .04	63.1 0.3	51.96 −.01	72.5 2.9	21.32 +.01	72.4 0.9
28.0	6.13 +.01	62.7 2.8	34.94 .06	62.7 0.5	51.99 +.06	69.4 3.1	21.35 .04	71.4 1.1
Sept. 7.0	6.18 .08	59.9 2.7	35.02 .09	62.1 0.7	52.08 .12	66.2 3.2	21.40 .07	70.2 1.3
17.0	6.30 .16	57.3 2.6	35.13 .13	61.3 0.9	52.23 .19	62.9 3.3	21.49 .10	68.8 1.5
26.9	6.49 .23	54.8 2.3	35.27 .16	60.3 1.1	52.45 .26	59.6 3.3	21.61 .14	67.2 1.7
Oct. 6.9	6.76 .30	52.7 1.9	35.45 .20	59.1 1.3	52.74 .32	56.2 3.3	21.77 .18	65.4 1.9
16.9	7.10 .37	51.0 1.4	35.66 .23	57.6 1.5	53.10 .39	53.0 3.2	21.98 .22	63.4 2.0
26.9	7.50 .42	49.9 0.9	35.91 .27	56.0 1.7	53.52 .45	49.9 2.9	22.21 .26	61.3 2.2
Nov. 5.8	7.95 .47	49.3 −0.3	36.20 .30	54.2 1.9	54.01 .51	47.1 2.7	22.49 .29	59.1 2.2
15.8	8.44 .50	49.3 +0.3	36.50 .32	52.2 2.0	54.55 .56	44.6 2.3	22.80 .32	56.8 2.3
25.8	8.96 .52	50.0 1.0	36.83 .34	50.2 2.1	55.13 .59	42.4 1.9	23.13 .34	54.5 2.2
Dec. 5.7	9.48 .52	51.3 1.6	37.18 .34	48.1 2.0	55.74 .61	40.8 1.4	23.48 .36	52.4 2.1
15.7	10.00 .50	53.1 2.2	37.52 .34	46.1 2.0	56.36 .62	39.6 0.9	23.84 .36	50.3 1.9
25.7	10.49 .47	55.6 2.6	37.86 .33	44.1 1.8	56.97 .60	39.0 −0.3	24.20 .35	48.5 1.7
35.7	10.94 +.42	58.4 +3.0	38.18 +.31	42.4 −1.6	57.56 +.57	38.9 +0.2	24.55 +.33	46.9 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Argus.		*1 Draconis.		α Hydræ.		*d Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 9 13	° ′ 58 44	h m 9 18	° ′ 81 52	h m 9 21	° ′ 8 6	h m 9 23	° ′ 70 22
	s	″	s	″	s	″	s	″
Jan. 0.6	42.62 +.31	14.9 +3.5	53.95+1.35	58.3 +1.9	20.98 +.25	25.4 +2.3	14.78 +.64	64.4 +1.5
10.6	42.89 .23	18.5 3.7	55.19 1.11	60.5 2.3	21.21 .21	27.7 2.2	15.37 .54	66.1 1.9
20.6	43.07 .14	22.3 3.8	56.18 .84	63.0 2.7	21.40 .16	29.8 2.0	15.85 .42	68.2 2.3
30.5	43.18 +.06	26.1 3.8	56.87 .53	65.9 2.9	21.54 .11	31.7 1.8	16.20 .28	70.7 2.5
Feb. 9.5	43.20 −.02	29.8 3.6	57.24+ .22	68.9 3.0	21.63 .06	33.5 1.6	16.42 .15	73.3 2.7
19.5	43.14 .10	33.4 3.5	57.30− .09	72.0 3.0	21.67 +.02	35.0 1.4	16.49 +.01	76.1 2.8
Mar. 1.4	43.00 .17	36.7 3.2	57.06 .39	75.0 2.9	21.66 −.03	36.2 1.1	16.44 −.12	78.8 2.7
11.4	42.80 .23	39.7 2.8	56.53 .66	77.8 2.7	21.61 .06	37.2 0.9	16.26 .23	81.5 2.5
21.4	42.54 .28	42.4 2.4	55.74 .89	80.3 2.3	21.53 .10	37.9 0.6	15.97 .33	83.9 2.2
31.4	42.24 .32	44.6 2.0	54.74 1.08	82.4 1.9	21.42 .12	38.4 0.4	15.59 .41	85.9 1.9
Apr. 10.3	41.91 .35	46.4 1.5	53.58 1.21	84.1 1.4	21.29 .13	38.7 +0.1	15.15 .47	87.6 1.5
20.3	41.55 .36	47.7 1.0	52.31 1.29	85.2 0.8	21.16 .14	38.7 −0.1	14.66 .50	88.9 1.0
30.3	41.18 .37	48.5 +0.5	50.99 1.33	85.8 +0.3	21.02 .14	36.5 0.3	14.15 .51	89.6 +0.5
May 10.3	40.82 .36	48.7 0.0	49.67 1.30	85.8 −0.3	20.89 .13	38.2 0.5	13.64 .50	89.8 0.0
20.2	40.46 .35	48.5 −0.5	48.39 1.23	85.2 0.8	20.76 .12	37.6 0.7	13.16 .46	89.6 −0.5
30.2	40.13 .32	47.8 1.0	47.21 1.12	84.1 1.4	20.65 .10	36.8 0.8	12.71 .42	88.8 1.0
June 9.2	39.82 .29	46.5 1.5	46.17 .97	82.5 1.8	20.57 .08	36.0 1.0	12.32 .35	87.5 1.5
19.1	39.55 .25	44.8 1.9	45.29 .79	80.5 2.3	20.50 .06	34.9 1.1	12.01 .28	85.8 1.9
29.1	39.32 .20	42.7 2.3	44.60 .58	78.0 2.6	20.45 −.03	33.8 1.2	11.77 .20	83.8 2.2
July 9.1	39.14 .15	40.3 2.6	44.12 .37	75.2 2.9	20.44 −.01	32.6 1.2	11.61 .11	81.4 2.5
19.1	39.01 .10	37.6 ·2.8	43.86 −.14	72.2 3.1	20.44 +.02	31.4 1.2	11.55 −.02	78.8 2.8
29.0	38.94 −.04	34.7 3.0	43.83 +.09	68.9 3.3	20.48 .05	30.2 1.2	11.58 +.07	75.9 2.9
Aug. 8.0	38.94 +.03	31.7 3.0	44.04 .32	65.6 3.4	20.54 .08	29.0 1.1	11.69 .17	72.9 3.0
18.0	39.00 .09	28.7 3.0	44.47 .55	62.2 3.4	20.63 .10	28.0 1.0	11.91 .26	69.8 3.1
28.0	39.12 .16	25.8 2.8	45.13 .77	58.8 3.3	20.75 .13	27.1 0.8	12.21 .35	66.7 3.1
Sept. 6.9	39.32 .23	23.0 2.5	46.00 .98	55.5 3.2	20.90 .16	26.4 0.5	12.60 .43	63.6 3.0
16.9	39.58 .29	20.7 2.2	47.08 1.17	52.3 3.0	21.08 .19	26.0 −0.3	13.08 .52	60.6 2.9
26.9	39.90 .35	18.7 1.7	48.35 1.35	49.4 2.8	21.29 .22	25.9 +0.1	13.63 .59	57.8 2.7
Oct. 6.8	40.28 .40	17.2 1.2	49.79 1.51	46.8 2.5	21.53 .25	26.1 0.4	14.26 .66	55.1 2.5
16.8	40.71 .44	16.3 −0.6	51.37 1.65	44.5 2.1	21.79 .28	26.7 0.8	14.96 .72	52.8 2.2
26.8	41.17 .48	16.0 0.0	53.08 1.75	42.6 1.6	22.08 .30	27.7 1.1	15.71 .78	50.8 1.8
Nov. 5.8	41.66 .49	16.4 +0.7	54.87 1.82	41.2 1.2	22.39 .32	28.9 1.4	16.51 .81	49.2 1.4
15.7	42.16 .50	17.4 1.3	56.72 1.85	40.3 0.6	22.71 .33	30.5 1.7	17.33 .83	48.0 0.9
25.7	42.66 .48	19.1 1.9	58.57 1.84	40.0 −0.1	23.04 .33	32.4 2.0	18.17 .83	47.4 −0.4
Dec. 5.7	43.13 .45	21.3 2.5	60.38 1.77	40.2 +0.5	23.36 .32	34.5 2.1	18.99 .81	47.2 +0.1
15.7	43.56 .41	24.1 3.0	62.10 1.65	41.0 1.1	23.67 .30	36.7 2.3	19.79 .76	47.6 0.6
25.6	43.94 .35	27.2 3.3	63.68 1.48	42.3 1.5	23.96 .27	39.0 2.3	20.52 .70	48.5 1.1
35.6	44.25 +.27	30.7 +3.6	65.07+1.28	44.2 +1.9	24.22 +.24	41.3 +2.2	21.17 +.61	49.9 +1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Ursæ Majoris.		ε Leonis.		μ Leonis.		α Leonis. (*Regulus.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	9 24	52 14	9 38	24 21	9 45	26 35	10 1	12 34
	s	″	s	″	s	″	s	″
Jan. 0.6	21.75 +.39	72.0 +0.7	38.57 +.30	28.5 −0.8	32.38 +.31	73.6 −0.7	36.47 +.29	76.2 −1.5
10.6	22.11 .33	72.9 1.1	38.84 .26	27.9 0.5	32.67 .27	73.0 0.4	36.74 .26	74.8 1.2
20.6	22.41 .26	74.1 1.4	39.08 .21	27.5 −0.2	32.91 .22	72.7 −0.1	36.98 .21	73.7 1.0
30.5	22.64 .19	75.7 1.7	39.26 .16	27.4 +0.1	33.11 .17	72.8 +0.2	37.17 .17	72.8 0.7
Feb. 9.5	22.79 .11	77.6 1.9	39.39 .10	27.6 0.3	33.25 .11	73.1 0.4	37.32 .12	72.2 0.5
19.5	22.86 +.03	79.6 2.0	39.47 +.05	28.1 0.5	33.33 .06	73.7 0.7	37.41 .07	71.9 −0.2
Mar. 1.4	22.85 −.04	81.6 2.1	39.49 .00	28.7 0.7	33.36 +.01	74.4 0.8	37.45 +.02	71.8 0.0
11.4	22.77 .11	83.7 2.0	39.47 −.04	29.5 0.8	33.34 −.04	75.3 1.0	37.45 −.02	71.9 +0.2
21.4	22.64 .16	85.6 1.8	39.40 .08	30.4 0.9	33.28 .08	76.3 1.0	37.41 .06	72.2 0.4
31.4	22.45 .20	87.4 1.6	39.30 .11	31.3 0.9	33.19 .11	77.4 1.0	37.34 .08	72.7 0.5
Apr. 10.3	22.23 .23	88.8 1.3	39.18 .13	32.2 0.9	33.06 .13	78.4 1.0	37.24 .11	73.2 0.5
20.3	21.99 .25	90.0 1.0	39.05 .14	33.0 0.8	32.93 .14	79.3 0.9	37.12 .12	73.8 0.6
30.3	21.75 .25	90.8 0.6	38.90 .14	33.8 0.7	32.78 .14	80.1 0.7	37.00 .12	74.4 0.6
May 10.3	21.50 .24	91.2 +0.2	38.76 .14	34.4 0.6	32.64 .14	80.7 0.6	36.88 .12	75.0 0.6
20.2	21.27 .22	91.3 −0.2	38.63 .12	34.9 0.4	32.50 .13	81.2 0.4	36.76 .11	75.6 0.5
30.2	21.06 .19	90.9 0.5	38.52 .11	35.2 0.3	32.38 .11	81.6 0.2	36.65 .10	76.1 0.5
June 9.2	20.89 .15	90.2 0.9	38.42 .08	35.4 +0.1	32.28 .09	81.7 +0.1	36.56 .09	76.6 0.5
19.1	20.75 .11	89.1 1.2	38.35 .06	35.4 −0.1	32.20 .07	81.7 −0.1	36.48 .07	77.0 0.4
29.1	20.66 .07	87.8 1.5	38.30 .03	35.3 0.2	32.15 .04	81.5 0.3	36.42 .05	77.3 0.3
July 9.1	20.61 −.02	86.1 1.8	38.28 −.01	35.0 0.4	32.12 −.02	81.1 0.5	36.39 −.03	77.6 0.2
19.1	20.61 +.02	84.2 2.0	38.28 +.02	34.5 0.5	32.11 +.01	80.5 0.6	36.37 .00	77.8 +0.1
29.0	20.66 .07	82.1 2.2	38.32 .05	33.9 0.7	32.14 .04	79.8 0.8	36.38 +.02	77.8 0.0
Aug. 8.0	20.75 .12	79.9 2.3	38.38 .08	33.2 0.8	32.20 .07	79.0 1.0	36.42 .05	77.7 −0.2
18.0	20.89 .16	77.5 2.4	38.48 .11	32.3 1.0	32.29 .10	77.9 1.1	36.48 .08	77.5 0.3
28.0	21.08 .21	75.0 2.5	38.60 .14	31.3 1.1	32.40 .13	76.7 1.3	36.57 .11	77.1 0.5
Sept. 6.9	21.31 .26	72.5 2.5	38.76 .17	30.1 1.3	32.55 .17	75.4 1.4	36.69 .14	76.5 0.7
16.9	21.59 .30	70.0 2.5	38.94 .20	28.7 1.4	32.74 .20	73.9 1.5	36.84 .17	75.7 0.9
26.9	21.92 .35	67.6 2.4	39.16 .23	27.3 1.5	32.95 .23	72.3 1.7	37.03 .20	74.7 1.1
Oct. 6.8	22.28 .39	65.2 2.3	39.41 .26	25.7 1.6	33.20 .26	70.5 1.8	37.24 .23	73.5 1.3
16.8	22.69 .42	63.0 2.1	39.69 .29	24.0 1.7	33.48 .29	68.8 1.8	37.49 .26	72.1 1.5
26.8	23.13 .45	61.0 1.9	40.00 .32	22.2 1.8	33.79 .32	66.9 1.9	37.77 .29	70.6 1.6
Nov. 5.8	23.60 .48	59.3 1.6	40.33 .34	20.4 1.8	34.13 .34	65.0 1.8	38.07 .31	68.8 1.8
15.7	24.09 .49	57.8 1.3	40.69 .36	18.7 1.7	34.48 .36	63.2 1.8	38.40 .33	67.0 1.9
25.7	24.58 .50	56.7 0.9	41.05 .36	17.0 1.6	34.85 .37	61.5 1.6	38.74 .34	65.1 1.9
Dec. 5.7	25.08 .49	56.0 0.5	41.41 .36	15.4 1.5	35.22 .37	60.0 1.5	39.08 .34	63.2 1.9
15.7	25.56 .46	55.7 −0.1	41.76 .34	14.1 1.3	35.58 .35	58.6 1.2	39.42 .33	61.4 1.8
25.6	26.00 .42	55.9 +0.4	42.10 .32	12.9 1.0	35.92 .33	57.5 1.0	39.74 .31	59.7 1.6
35.6	26.40 +.37	56.5 +0.8	42.40 +.28	12.0 −0.7	36.23 +.29	56.7 −0.7	40.04 +.28	58.1 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Chamæleontis.		η Virginis.		α¹ Crucis.		β Corvi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 12 10	° ′ 78 36	h m 12 13	° ′ 0 2	h m 12 19	° ′ 62 23	h m 12 27	° ′ 22 41
	s	″	s	″	s	″	s	″
Jan. 0.7	54.58 +1.18	1.1 +1.6	23.84 +.34	25.6 −2.2	31.33 +.52	15.4 +1.8	42.24 +.35	25.6 +2.2
10.7	55.74 1.11	2.9 2.1	24.17 .32	23.4 2.1	31.90 .55	17.4 2.3	42.58 .34	27.9 2.3
20.7	56.81 1.01	5.3 2.6	24.48 .30	21.4 1.9	32.43 .50	19.9 2.7	42.91 .32	30.3 2.4
30.6	57.76 .88	8.2 3.1	24.76 .27	19.6 1.7	32.91 .45	22.8 3.0	43.22 .29	32.7 2.4
Feb. 9.6	58.58 .74	11.5 3.4	25.01 .23	18.0 1.4	33.32 .38	26.0 3.3	43.49 .25	35.1 2.4
19.6	59.24 .58	15.0 3.6	25.22 .19	16.7 1.2	33.67 .31	29.4 3.5	43.72 .21	37.4 2.3
Mar. 1.6	59.73 .41	18.7 3.8	25.39 .15	15.7 0.9	33.94 .24	33.0 3.6	43.91 .17	39.7 2.1
11.5	60.06 .24	22.6 3.9	25.52 .11	14.9 0.6	34.14 .16	36.6 3.6	44.05 .14	41.7 1.9
21.5	60.22 +.07	26.5 3.8	25.61 .07	14.4 0.4	34.27 .09	40.1 3.5	44.16 .09	43.5 1.7
31.5	60.21 −.09	30.3 3.7	25.66 .03	14.2 −0.1	34.32 +.02	43.6 3.4	44.22 .05	45.1 1.5
Apr. 10.4	60.04 .24	34.0 3.6	25.68 +.01	14.1 +0.1	34.31 −.04	46.8 3.1	44.26 +.02	46.6 1.3
20.4	59.72 .39	37.4 3.3	25.67 −.02	14.3 0.2	34.23 .10	49.9 2.9	44.26 −.01	47.7 1.0
30.4	59.26 .52	40.6 3.0	25.64 .04	14.6 0.3	34.10 .16	52.6 2.6	44.24 .03	48.6 0.8
May 10.4	58.68 .64	43.5 2.6	25.59 .06	15.0 0.4	33.91 .21	55.0 2.2	44.19 .06	49.3 0.6
20.3	57.98 .74	45.9 2.2	25.52 .07	15.5 0.5	33.69 .25	57.1 1.8	44.13 .07	49.8 0.3
30.3	57.19 .83	47.9 1.7	25.44 .08	16.0 0.6	33.42 .28	58.7 1.4	44.04 .09	50.0 +0.1
June 9.3	56.32 .89	49.4 1.2	25.36 .09	16.6 0.6	33.12 .31	59.8 0.9	43.95 .10	50.0 −0.1
19.3	55.40 .94	50.4 0.7	25.27 .09	17.2 0.6	32.80 .33	60.5 +0.4	43.85 .11	49.8 0.3
29.2	54.44 .96	50.8 +0.1	25.17 .09	17.8 0.6	32.46 .34	60.7 −0.1	43.74 .11	49.4 0.5
July 9.2	53.48 .95	50.7 −0.4	25.08 .09	18.4 0.6	32.12 .34	60.3 0.5	43.62 .11	48.7 0.7
19.2	52.55 .91	50.0 0.9	24.99 .09	18.9 0.5	31.78 .33	59.6 1.0	43.51 .11	47.9 0.9
29.1	51.66 .85	48.8 1.4	24.91 .08	19.4 0.4	31.46 .31	58.3 1.5	43.40 .10	47.0 1.0
Aug. 8.1	50.85 .75	47.1 1.9	24.83 .06	19.8 0.3	31.16 .28	56.6 1.9	43.30 .09	45.9 1.1
18.1	50.16 .63	45.0 2.3	24.78 .05	20.1 0.2	30.90 .23	54.6 2.2	43.21 .08	44.8 1.2
28.1	49.60 .48	42.5 2.6	24.74 −.03	20.3 +0.1	30.70 .17	52.3 2.4	43.15 .05	43.6 1.2
Sept. 7.0	49.20 .30	39.7 2.8	24.72 .00	20.3 −0.1	30.56 .10	49.7 2.6	43.11 −.02	42.5 1.1
17.0	48.99 −.11	36.8 3.0	24.74 +.03	20.1 0.3	30.49 −.03	47.1 2.6	43.10 +.01	41.4 1.0
27.0	48.98 +.09	33.8 3.0	24.79 .07	19.6 0.5	30.51 +.06	44.4 2.6	43.14 .05	40.5 0.8
Oct. 7.0	49.18 .30	30.9 2.8	24.88 .11	19.0 0.8	30.61 .15	41.9 2.5	43.21 .10	39.8 0.6
16.9	49.58 .50	28.1 2.6	25.00 .15	18.0 1.1	30.81 .24	39.5 2.2	43.33 .14	39.4 −0.3
26.9	50.19 .70	25.7 2.3	25.18 .19	16.9 1.3	31.09 .33	37.5 1.8	43.50 .19	39.2 0.0
Nov. 5.9	50.97 .87	23.6 1.8	25.39 .23	15.4 1.6	31.46 .41	35.9 1.4	43.72 .24	39.4 +0.4
15.8	51.93 1.01	22.1 1.3	25.64 .27	13.7 1.8	31.91 .48	34.7 0.9	43.98 .28	40.0 0.8
25.8	53.00 1.12	21.0 0.7	25.93 .30	11.8 2.0	32.42 .53	34.1 −0.3	44.28 .31	41.0 1.2
Dec. 5.8	54.17 1.20	20.6 −0.1	26.24 .32	9.7 2.1	32.98 .57	34.1 +0.3	44.60 .34	42.4 1.5
15.8	55.40 1.23	20.9 +0.6	26.57 .34	7.5 2.2	33.57 .59	34.7 0.9	44.95 .35	44.0 1.8
25.7	56.64 1.22	21.8 1.2	26.91 .34	5.3 2.2	34.16 .59	35.9 1.5	45.31 .36	46.0 2.1
35.7	57.84 +1.17	23.3 +1.8	27.25 +.33	3.1 −2.1	34.75 +.57	37.7 +2.0	45.67 +.35	48.2 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Argus.		ι Leonis.		α Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 10 40	° ′ 59 0	h m 10 42	° ′ 11 12	h m 10 55	° ′ 62 25	h m 11 7	° ′ 21 12
	s	″	s	″	s	″	s	″
Jan. 0.7	8.54 +.44	38.0 +2.9	34.64 +.32	62.5 −1.7	53.02 +.59	59.0 0.0	20.93 +.34	68.0 −1.5
10.6	8.95 .38	41.1 3.3	34.95 .28	60.9 1.5	53.58 .53	59.3 +0.6	21.26 .31	66.7 1.2
20.6	9.30 .31	44.5 3.5	35.21 .25	59.5 1.2	54.09 .47	60.2 1.1	21.55 .28	65.6 0.9
30.6	9.58 .24	48.1 3.7	35.44 .20	58.5 0.9	54.53 .39	61.6 1.6	21.81 .24	64.9 0.5
Feb. 9.6	9.78 .16	51.8 3.7	35.62 .16	57.7 0.6	54.88 .31	63.4 2.0	22.03 .19	64.6 −0.1
19.5	9.90 .08	55.6 3.7	35.76 .11	57.2 .04	55.14 .21	65.7 2.3	22.19 .14	64.7 +0.2
Mar. 1.5	9.94 +.01	59.3 3.6	35.84 .06	56.9 −0.1	55.30 .11	68.1 2.5	22.31 .09	65.0 0.5
11.5	9.91 −.06	62.8 3.4	35.88 +.02	56.9 +0.1	55.36 +.02	70.7 2.6	22.38 +.04	65.6 0.7
21.5	9.82 .12	66.1 3.1	35.88 −.02	57.2 0.3	55.34 −.07	73.4 2.6	22.40 .00	66.4 0.9
31.4	9.67 .18	69.1 2.8	35.84 .05	57.6 0.5	55.23 .14	75.9 2.5	22.39 −.03	67.3 1.0
Apr. 10.4	9.46 .23	71.7 2.5	35.78 .08	58.1 0.6	55.05 .21	78.3 2.3	22.34 .06	68.4 1.1
20.4	9.21 .26	74.0 2.0	35.69 .09	58.7 0.6	54.81 .26	80.4 1.9	22.26 .08	69.4 1.1
30.3	8.94 .29	75.8 1.6	35.59 .10	59.4 0.7	54.53 .30	82.2 1.6	22.17 .10	70.5 1.0
May 10.3	8.64 .31	77.2 1.1	35.48 .11	60.0 0.6	54.22 .32	83.6 1.1	22.06 .11	71.5 0.9
20.3	8.32 .32	78.1 0.6	35.37 .11	60.7 0.6	53.89 .33	84.5 0.7	21.95 .11	72.3 0.8
30.3	7.99 .32	78.4 +0.1	35.26 .10	61.3 0.6	53.56 .33	84.9 +0.2	21.84 .11	73.1 0.7
June 9.2	7.68 .31	78.3 −0.4	35.16 .09	61.8 0.5	53.24 .31	84.9 −0.3	21.73 .11	73.7 0.5
19.2	7.37 .30	77.7 0.9	35.07 .08	62.3 0.4	52.94 .29	84.3 0.8	21.63 .10	74.1 0.3
29.2	7.07 .28	76.6 1.3	35.00 .07	62.7 0.4	52.66 .25	83.3 1.2	21.53 .09	74.3 +0.1
July 9.2	6.81 .25	75.0 1.7	34.93 .05	63.1 0.3	52.43 .21	81.9 1.6	21.45 .07	74.3 −0.1
19.1	6.57 .21	73.1 2.1	34.89 .03	63.3 +0.1	52.24 .17	80.0 2.0	21.39 .05	74.1 0.3
29.1	6.38 .17	70.9 2.4	34.87 −.01	63.3 0.0	52.09 .12	77.8 2.4	21.34 .04	73.8 0.5
Aug. 8.1	6.24 .11	68.3 2.6	34.87 +.01	63.3 −0.1	52.00 .06	75.3 2.7	21.32 −.01	73.2 0.7
18.0	6.16 −.05	65.6 2.8	34.89 .04	63.1 0.3	51.96 −.01	72.5 2.9	21.32 +.01	72.4 0.9
28.0	6.13 +.01	62.7 2.8	34.94 .06	62.7 0.5	51.99 +.06	69.4 3.1	21.35 .04	71.4 1.1
Sept. 7.0	6.18 .08	59.9 2.7	35.02 .09	62.1 0.7	52.08 .12	66.2 3.2	21.40 .07	70.2 1.3
17.0	6.30 .16	57.3 2.6	35.13 .13	61.3 0.9	52.23 .19	62.9 3.3	21.49 .10	68.8 1.5
26.9	6.49 .23	54.8 2.3	35.27 .16	60.3 1.1	52.45 .26	59.6 3.3	21.61 .14	67.2 1.7
Oct. 6.9	6.76 .30	52.7 1.9	35.45 .20	59.1 1.3	52.74 .32	56.2 3.3	21.77 .18	65.4 1.9
16.9	7.10 .37	51.0 1.4	35.66 .23	57.6 1.5	53.10 .39	53.0 3.2	21.98 .22	63.4 2.0
26.9	7.50 .42	49.9 0.9	35.91 .27	56.0 1.7	53.52 .45	49.9 2.9	22.21 .26	61.3 2.2
Nov. 5.8	7.95 .47	49.3 −0.3	36.20 .30	54.2 1.9	54.01 .51	47.1 2.7	22.49 .29	59.1 2.2
15.8	8.44 .50	49.3 +0.3	36.50 .32	52.2 2.0	54.55 .56	44.6 2.3	22.80 .32	56.8 2.3
25.8	8.96 .52	50.0 1.0	36.83 .34	50.2 2.1	55.13 .59	42.4 1.9	23.13 .34	54.5 2.2
Dec. 5.7	9.48 .52	51.3 1.6	37.18 .34	48.1 2.0	55.74 .61	40.8 1.4	23.48 .36	52.4 2.1
15.7	10.00 .50	53.1 2.2	37.52 .34	46.1 2.0	56.36 .62	39.6 0.9	23.84 .36	50.3 1.9
25.7	10.49 .47	55.6 2.6	37.86 .33	44.1 1.8	56.97 .60	39.0 −0.3	24.20 .35	48.5 1.7
35.7	10.94 +.42	58.4 +3.0	38.18 +.31	42.4 −1.6	57.56 +.57	38.9 +0.2	24.55 +.33	46.9 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Crateris.		τ Leonis.		*λ Draconis.		υ Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 11 12	° ′ 14 5	h m 11 21	° ′ 3 33	h m 11 23	° ′ 70 1	h m 11 30	° ′ 0 7
	s	″	s	″	s	″	s	″
Jan. 0.7	59.17 +.32	19.4 +2.4	23.98 +.33	23.6 −2.0	51.27 +.77	40.4 −0.1	26.36 +.33	16.6 +2.2
10.7	59.48 .29	21.8 2.4	24.29 .30	21.6 1.9	52.03 .72	40.6 +0.5	26.67 .30	18.7 2.0
20.6	59.76 .26	24.2 2.4	24.58 .27	19.8 1.7	52.72 .65	41.5 1.1	26.96 .27	20.6 1.9
30.6	60.00 .22	26.5 2.3	24.83 .23	18.2 1.5	53.33 .56	42.9 1.7	27.22 .24	22.4 1.6
Feb. 9.6	60.20 .17	28.7 2.1	25.04 .19	16.9 1.2	53.84 .45	44.8 2.1	27.44 .19	23.9 1.4
19.6	60.35 .13	30.7 1.9	25.20 .14	15.8 0.9	54.24 .33	47.1 2.5	27.61 .15	25.2 1.1
Mar. 1.5	60.46 .09	32.6 1.7	25.33 .10	15.1 0.6	54.51 .21	49.7 2.7	27.74 .11	26.2 0.9
11.5	60.52 +.04	34.1 1.4	25.40 .06	14.6 0.4	54.65 +.08	52.5 2.8	27.82 .07	26.9 0.6
21.5	60.54 .00	35.4 1.2	25.44 +.02	14.3 −0.2	54.67 −.04	55.4 2.9	27.87 +.03	27.4 0.4
31.5	60.53 −.03	36.5 0.9	25.44 −.02	14.3 +0.1	54.57 .15	58.2 2.8	27.88 −.01	27.6 +0.1
Apr. 10.4	60.49 .05	37.3 0.7	25.41 .04	14.5 0.2	54.37 .25	60.9 2.5	27.85 .03	27.7 0.0
20.4	60.42 .07	37.8 0.4	25.36 .06	14.8 0.3	54.07 .33	63.3 2.2	27.81 .06	27.6 −0.2
30.4	60.34 .09	38.1 +0.2	25.28 .08	15.2 0.5	53.70 .40	65.4 1.8	27.74 .07	27.3 0.3
May 10.3	60.24 .10	38.3 0.0	25.20 .09	15.7 0.5	53.28 .44	67.0 1.4	27.66 .08	26.9 0.4
20.3	60.14 .11	38.2 −0.2	25.10 .10	16.2 0.6	52.82 .47	68.2 0.9	27.57 .09	26.5 0.5
30.3	60.03 .11	37.8 0.4	25.00 .10	16.8 0.6	52.34 .48	68.8 +0.4	27.48 .10	25.9 0.6
June 9.3	59.92 .10	37.4 0.6	24.91 .09	17.4 0.6	51.86 .47	69.0 −0.1	27.38 .09	25.3 0.6
19.2	59.82 .10	36.7 0.7	24.81 .09	18.0 0.6	51.39 .45	68.6 0.6	27.29 .09	24.7 0.6
29.2	59.73 .09	35.9 0.9	24.73 .08	18.6 0.6	50.95 .42	67.7 1.1	27.20 .09	24.1 0.6
July 9.2	59.64 .08	35.0 1.0	24.65 .07	19.2 0.5	50.55 .38	66.3 1.6	27.12 .08	23.5 0.6
19.2	59.56 .07	34.0 1.0	24.58 .06	19.7 0.4	50.19 .32	64.4 2.1	27.04 .07	22.9 0.6
29.1	59.51 .05	32.9 1.1	24.53 .04	20.1 0.3	49.90 .26	62.1 2.5	26.98 .05	22.4 0.5
Aug. 8.1	59.47 .03	31.8 1.1	24.49 −.03	20.4 0.2	49.67 .19	59.5 2.8	26.94 .03	21.9 0.4
18.1	59.45 −.01	30.7 1.0	24.48 .00	20.5 +0.1	49.52 .12	56.5 3.1	26.92 −.01	21.5 0.3
28.0	59.45 +.02	29.7 0.9	24.49 +.02	20.6 −0.1	49.44 −.03	53.3 3.3	26.91 +.01	21.3 −0.1
Sept. 7.0	59.49 .06	28.8 0.8	24.52 .05	20.4 0.3	49.45 +.05	49.9 3.5	26.94 .04	21.3 +0.1
17.0	59.57 .09	28.1 0.6	24.59 .09	20.0 0.5	49.54 .14	46.3 3.6	27.00 .08	21.4 0.3
27.0	59.67 .13	27.7 −0.3	24.69 .12	19.4 0.7	49.74 .24	42.6 3.6	27.09 .11	21.8 0.5
Oct. 6.9	59.82 .17	27.5 0.0	24.83 .16	18.5 1.0	50.02 .33	39.0 3.6	27.22 .15	22.5 0.8
16.9	60.01 .21	27.7 +0.4	25.01 .20	17.4 1.3	50.40 .43	35.5 3.5	27.39 .19	23.4 1.1
26.9	60.24 .24	28.2 0.7	25.23 .23	16.0 1.5	50.87 .52	32.1 3.3	27.60 .23	24.6 1.3
Nov. 5.8	60.50 .28	29.1 1.1	25.48 .27	14.4 1.7	51.44 .60	28.9 3.0	27.85 .26	26.1 1.6
15.8	60.80 .31	30.3 1.4	25.77 .30	12.6 1.9	52.08 .67	26.1 2.6	28.13 .29	27.8 1.8
25.8	61.12 .33	31.9 1.7	26.08 .32	10.6 2.1	52.78 .73	23.7 2.1	28.44 .32	29.7 2.0
Dec. 5.8	61.46 .34	33.8 2.0	26.41 .34	8.5 2.1	53.54 .77	21.8 1.6	28.77 .33	31.8 2.1
15.7	61.80 .34	35.9 2.2	26.75 .34	6.3 2.2	54.33 .79	20.4 1.1	29.10 .34	34.0 2.2
25.7	62.14 .33	38.2 2.4	27.09 .33	4.1 2.1	55.12 .78	19.7 −0.5	29.44 .33	36.2 2.2
35.7	62.46 +.31	40.6 +2.4	27.42 +.32	2.0 −2.0	55.89 +.76	19.5 +0.1	29.77 +.32	38.3 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Centauri.		* α Draconis.		α Bootis. (*Arcturus.*)		θ Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$13^{h}\ 54^{m}$	$59^{\circ}\ 45'$	$14^{h}\ 0^{m}$	$64^{\circ}\ 58'$	$14^{h}\ 9^{m}$	$19^{\circ}\ 50'$	$14^{h}\ 20^{m}$	$52^{\circ}\ 25'$
	s	″	s	″	s	″	s	″
Jan. 0.8	50.31 +.57	13.6 +0.6	56.06 +.58	43.2 −2.2	50.88 +.33	36.6 −2.5	51.11 +.42	66.0 −2.6
10.8	50.88 .57	14.5 1.1	56.66 .61	41.2 1.7	51.22 .34	34.3 2.2	51.55 .45	63.6 2.1
20.8	51.45 .56	15.8 1.6	57.28 .62	39.9 1.0	51.55 .34	32.2 1.9	52.00 .46	61.8 1.5
30.7	52.00 .54	17.6 2.0	57.90 .61	39.2 −0.4	51.89 .33	30.5 1.5	52.46 .45	60.6 0.9
Feb. 9.7	52.52 .50	19.8 2.3	58.49 .58	39.1 +0.3	52.21 .31	29.2 1.0	52.90 .43	60.0 −0.2
19.7	53.01 .46	22.3 2.6	59.05 .53	39.8 0.9	52.50 .28	28.4 0.6	53.32 .40	60.1 +0.4
Mar. 1.7	53.44 .41	25.1 2.8	59.55 .46	41.0 1.5	52.77 .25	28.0 −0.2	53.71 .36	60.7 0.9
11.6	53.82 .35	28.0 3.0	59.98 .39	42.8 2.0	53.01 .22	28.1 +0.3	54.05 .31	62.0 1.5
21.6	54.14 .29	31.0 3.1	60.32 .31	45.0 2.4	53.21 .18	28.6 0.6	54.33 .26	63.7 2.0
31.6	54.40 .23	34.1 3.1	60.59 .22	47.6 2.7	53.38 .15	29.3 0.9	54.56 .20	65.9 2.3
Apr. 10.5	54.60 .17	37.2 3.0	60.76 .13	50.5 2.9	53.51 .11	30.4 1.2	54.74 .14	68.4 2.6
20.5	54.75 .11	40.2 2.9	60.84 +.04	53.4 3.0	53.61 .08	31.7 1.4	54.85 .08	71.1 2.7
30.5	54.83 +.05	43.1 2.8	60.84 −.04	56.4 2.9	53.67 .05	33.2 1.5	54.90 +.03	73.9 2.8
May 10.5	54.85 .00	45.8 2.6	60.76 .12	59.3 2.8	53.71 +.02	34.7 1.5	54.91 −.02	76.6 2.7
20.4	54.82 −.06	48.3 2.4	60.60 .19	62.0 2.5	53.71 −.01	36.3 1.5	54.86 .07	79.3 2.6
30.4	54.73 .11	50.5 2.1	60.38 .25	64.4 2.2	53.69 .03	37.8 1.4	54.76 .12	81.7 2.3
June 9.4	54.59 .16	52.5 1.7	60.09 .31	66.4 1.8	53.64 .06	39.2 1.3	54.62 .16	83.9 2.0
19.4	54.41 .21	54.0 1.3	59.77 .35	68.0 1.4	53.57 .08	40.4 1.1	54.44 .19	85.7 1.6
29.3	54.18 .25	55.1 0.9	59.40 .38	69.1 0.9	53.48 .10	41.5 0.9	54.24 .22	87.2 1.2
July 9.3	53.91 .28	55.9 0.5	59.00 .40	69.8 +0.4	53.38 .11	42.3 0.7	54.00 .24	88.2 0.8
19.3	53.63 .30	56.2 +0.1	58.59 .42	69.9 −0.1	53.26 .13	42.9 0.4	53.75 .26	88.7 +0.3
29.2	53.32 .31	56.0 −0.4	58.16 .42	69.5 0.7	53.12 .14	43.2 +0.2	53.48 .27	88.8 −0.2
Aug. 8.2	53.00 .31	55.4 0.8	57.74 .41	68.6 1.2	52.98 .14	43.2 −0.1	53.21 .27	88.4 0.6
18.2	52.69 .30	54.3 1.2	57.34 .39	67.2 1.7	52.84 .14	43.0 0.4	52.94 .27	87.5 1.1
28.2	52.41 .27	52.9 1.6	56.96 .36	65.3 2.1	52.71 .13	42.4 0.7	52.68 .25	86.1 1.6
Sept. 7.1	52.15 .23	51.2 1.9	56.62 .32	62.9 2.5	52.59 .11	41.6 1.0	52.44 .23	84.3 2.0
17.1	51.95 .17	49.1 2.1	56.32 .26	60.2 2.9	52.49 .09	40.5 1.3	52.22 .19	82.0 2.4
27.1	51.80 .11	46.9 2.3	56.09 .20	57.1 3.3	52.41 .06	39.0 1.6	52.05 .15	79.4 2.8
Oct. 7.1	51.74 −.03	44.5 2.3	55.92 .13	53.7 3.5	52.37 −.02	37.3 1.9	51.92 .10	76.4 3.1
17.0	51.75 +.06	42.2 2.3	55.83 −.04	50.0 3.7	52.37 +.02	35.3 2.1	51.85 −.04	73.1 3.4
27.0	51.86 .15	39.9 2.2	55.83 +.05	46.2 3.9	52.41 .07	33.1 2.4	51.84 +.03	69.6 3.6
Nov. 6.0	52.05 .24	37.9 1.9	55.92 .14	42.3 3.9	52.51 .12	30.6 2.6	51.90 .09	65.9 3.7
15.9	52.34 .33	36.1 1.6	56.11 .24	38.4 3.8	52.65 .17	28.0 2.7	52.03 .17	62.2 3.7
25.9	52.70 .40	34.7 1.2	56.39 .33	34.6 3.7	52.84 .21	25.2 2.8	52.24 .23	58.5 3.7
Dec. 5.9	53.14 .47	33.8 0.7	56.77 .41	31.0 3.4	53.08 .26	22.4 2.8	52.50 .30	54.8 3.5
15.9	53.64 .52	33.3 −0.2	57.22 .49	27.8 3.0	53.35 .29	19.6 2.8	52.83 .35	51.4 3.2
25.8	54.18 .55	33.4 +0.3	57.74 .55	24.9 2.6	53.66 .32	16.8 2.6	53.21 .40	48.3 2.9
35.8	54.75 +.57	33.9 +0.8	58.32 +.59	22.6 −2.1	53.99 +.33	14.3 −2.4	53.63 +.43	45.7 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Chamæleontis.		η Virginis.		α¹ Crucis.		β Corvi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 12 10	° ′ 78 36	h m 12 13	° ′ 0 2	h m 12 19	° ′ 62 23	h m 12 27	° ′ 22 41
	s	″	s	″	s	″	s	″
Jan. 0.7	54.58 +1.18	1.1 +1.6	23.84 +.34	25.6 −2.2	31.33 +.58	15.4 +1.8	42.24 +.35	25.6 +2.2
10.7	55.74 1.11	2.9 2.1	24.17 .32	23.4 2.1	31.90 .55	17.4 2.3	42.58 .34	27.9 2.3
20.7	56.81 1.01	5.3 2.6	24.48 .30	21.4 1.9	32.43 .50	19.9 2.7	42.91 .32	30.3 2.4
30.6	57.76 .88	8.2 3.1	24.76 .27	19.6 1.7	32.91 .45	22.8 3.0	43.22 .28	32.7 2.4
Feb. 9.6	58.58 .74	11.5 3.4	25.01 .23	18.0 1.4	33.32 .38	26.0 3.3	43.49 .25	35.1 2.4
19.6	59.21 .58	15.0 3.6	25.22 .19	16.7 1.2	33.67 .31	29.4 3.5	43.72 .21	37.4 2.3
Mar. 1.6	59.73 .41	18.7 3.8	25.39 .15	15.7 0.9	33.94 .24	33.0 3.6	43.91 .17	39.7 2.1
11.5	60.06 .24	22.6 3.9	25.52 .11	14.9 0.6	34.14 .16	36.6 3.6	44.05 .14	41.7 1.9
21.5	60.22 +.07	26.5 3.8	25.61 .07	14.4 0.4	34.27 .09	40.1 3.5	44.16 .09	43.5 1.7
31.5	60.21 −.09	30.3 3.7	25.66 .03	14.2 −0.1	34.32 +.02	43.6 3.4	44.22 .05	45.1 1.5
Apr. 10.4	60.04 .24	34.0 3.6	25.68 +.01	14.1 +0.1	34.31 −.04	46.8 3.1	44.26 +.02	46.6 1.3
20.4	59.72 .39	37.4 3.3	25.67 −.02	14.3 0.2	34.23 .10	49.9 2.9	44.26 −.01	47.7 1.0
30.4	59.26 .52	40.6 3.0	25.64 .04	14.6 0.3	34.10 .16	52.6 2.6	44.24 .03	48.6 0.8
May 10.4	58.68 .64	43.5 2.6	25.59 .06	15.0 0.4	33.91 .21	55.0 2.2	44.19 .06	49.3 0.6
20.3	57.98 .74	45.9 2.2	25.52 .07	15.5 0.5	33.69 .25	57.1 1.8	44.13 .07	49.8 0.3
30.3	57.19 .83	47.9 1.7	25.44 .08	16.0 0.6	33.42 .28	58.7 1.4	44.04 .09	50.0 +0.1
June 9.3	56.32 .89	49.4 1.2	25.36 .09	16.6 0.6	33.12 .31	59.8 0.9	43.95 .10	50.0 −0.1
19.3	55.40 .94	50.4 0.7	25.27 .09	17.2 0.6	32.80 .33	60.5 +0.4	43.85 .11	49.8 0.3
29.2	54.44 .96	50.8 +0.1	25.17 .09	17.8 0.6	32.46 .34	60.7 −0.1	43.74 .11	49.4 0.5
July 9.2	53.48 .95	50.7 −0.4	25.08 .09	18.4 0.6	32.12 .34	60.3 0.5	43.62 .11	48.7 0.7
19.2	52.55 .91	50.0 0.9	24.99 .09	18.9 0.5	31.78 .33	59.6 1.0	43.51 .11	47.9 0.9
29.1	51.66 .85	48.8 1.4	24.91 .08	19.4 0.4	31.46 .31	58.3 1.5	43.40 .10	47.0 1.0
Aug. 8.1	50.85 .75	47.1 1.9	24.83 .06	19.8 0.3	31.16 .28	56.6 1.9	43.30 .09	45.9 1.1
18.1	50.16 .63	45.0 2.3	24.78 .05	20.1 0.2	30.90 .23	54.6 2.2	43.21 .08	44.8 1.2
28.1	49.60 .48	42.5 2.6	24.74 −.03	20.3 +0.1	30.70 .17	52.3 2.4	43.15 .05	43.6 1.2
Sept. 7.0	49.20 .30	39.7 2.8	24.72 .00	20.3 −0.1	30.56 .10	49.7 2.6	43.11 −.02	42.5 1.1
17.0	48.99 −.11	36.8 3.0	24.74 +.03	20.1 0.3	30.49 −.03	47.1 2.6	43.10 +.01	41.4 1.0
27.0	48.98 +.09	33.8 3.0	24.79 .07	19.6 0.5	30.51 +.06	44.4 2.6	43.14 .06	40.5 0.8
Oct. 7.0	49.18 .30	30.9 2.8	24.88 .11	19.0 0.8	30.61 .15	41.9 2.5	43.21 .10	39.8 0.6
16.9	49.58 .50	28.1 2.6	25.00 .15	18.0 1.1	30.81 .24	39.5 2.2	43.33 .14	39.4 −0.3
26.9	50.19 .70	25.7 2.3	25.18 .19	16.9 1.3	31.09 .33	37.5 1.8	43.50 .19	39.2 0.0
Nov. 5.9	50.97 .87	23.6 1.8	25.39 .23	15.4 1.6	31.46 .41	35.9 1.4	43.72 .24	39.4 +0.4
15.8	51.93 1.01	22.1 1.3	25.64 .27	13.7 1.8	31.91 .48	34.7 0.9	43.98 .28	40.0 0.8
25.8	53.00 1.12	21.0 0.7	25.93 .30	11.8 2.0	32.42 .53	34.1 −0.3	44.28 .31	41.0 1.2
Dec. 5.8	54.17 1.20	20.6 −0.1	26.24 .32	9.7 2.1	32.98 .57	34.1 +0.3	44.60 .34	42.4 1.5
15.8	55.40 1.23	20.9 +0.6	26.57 .34	7.5 2.2	33.57 .59	34.7 0.9	44.95 .35	44.0 1.8
25.7	56.64 1.22	21.8 1.2	26.91 .34	5.3 2.2	34.16 .59	35.9 1.5	45.31 .36	46.0 2.1
35.7	57.84 +1.17	23.3 +1.8	27.25 +.33	3.1 −2.1	34.75 +.57	37.7 +2.0	45.67 +.35	48.2 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*κ Draconis.		*32 Camelop. (foll.)		12 Can. Venaticorum.		θ Virginis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 12 28	° ′ 70 28	h m 12 48	° ′ 84 5	h m 12 50	° ′ 38 59	h m 13 3	° ′ 4 51
	s	″	s	″	s	″	s	″
Jan. 0.8	3.32 +.79	62.7 −1.0	15.05 +2.26	54.6 −0.9	4.38 +.40	68.0 −1.9	21.55 +.34	32.1 +2.2
10.7	4.10 .77	62.1 −0.3	17.34 2.27	54.0 −0.2	4.78 .39	66.4 1.4	21.88 .33	34.2 2.1
20.7	4.86 .74	62.1 +0.3	19.60 2.21	54.1 +0.4	5.17 .38	65.2 0.9	22.21 .32	36.3 2.0
30.7	5.57 .67	62.8 0.9	21.76 2.06	54.8 1.0	5.54 .35	64.6 −0.3	22.52 .29	38.3 1.9
Feb. 9.6	6.21 .59	64.0 1.5	23.73 1.84	56.2 1.6	5.87 .31	64.5 +0.2	22.80 .27	40.0 1.7
19.6	6.75 .49	65.8 2.0	25.45 1.56	58.1 2.1	6.17 .27	65.0 0.7	23.05 .23	41.6 1.4
Mar. 1.6	7.19 .38	68.1 2.4	26.85 1.23	60.4 2.5	6.41 .22	65.9 1.1	23.26 .19	42.9 1.2
11.6	7.51 .25	70.7 2.7	27.90 .85	63.2 2.8	6.60 .17	67.2 1.5	23.44 .16	43.9 0.9
21.5	7.70 .13	73.5 2.9	28.56 .46	66.1 3.0	6.75 .12	68.8 1.8	23.58 .12	44.7 0.7
31.5	7.77 +.01	76.4 2.9	28.82 +.07	69.2 3.1	6.84 .07	70.7 2.0	23.68 .09	45.3 0.4
Apr. 10.5	7.72 −.10	79.4 2.9	28.69 −.32	72.3 3.0	6.89 +.03	72.8 2.1	23.75 .05	45.6 +0.2
20.5	7.57 .20	82.2 2.7	28.17 .69	75.2 2.8	6.89 −.02	75.0 2.1	23.79 +.03	45.7 0.0
30.4	7.32 .29	84.8 2.4	27.31 1.01	77.9 2.5	6.86 .05	77.1 2.0	23.81 .00	45.6 −0.1
May 10.4	6.98 .37	87.1 2.1	26.14 1.30	80.3 2.2	6.79 .08	79.1 1.9	23.80 −.02	45.4 0.3
20.4	6.58 .42	88.9 1.6	24.72 1.53	82.2 1.7	6.69 .11	80.9 1.7	23.77 .04	45.1 0.4
30.3	6.13 .47	90.4 1.2	23.08 1.71	83.7 1.2	6.57 .13	82.5 1.4	23.71 .06	44.7 0.4
June 9.3	5.65 .49	91.3 0.7	21.30 1.84	84.6 0.7	6.44 .14	83.8 1.1	23.65 .07	44.2 0.5
19.3	5.14 .51	91.7 +0.1	19.41 1.91	85.0 +0.1	6.29 .15	84.7 0.8	23.57 .08	43.7 0.5
29.3	4.63 .50	91.6 −0.4	17.48 1.92	84.9 −0.4	6.14 .16	85.3 +0.4	23.48 .09	43.2 0.6
July 9.2	4.14 .48	90.9 0.9	15.56 1.89	84.2 1.0	5.98 .16	85.6 0.0	23.38 .10	42.6 0.6
19.2	3.67 .46	89.7 1.4	13.70 1.81	82.9 1.5	5.82 .15	85.4 −0.3	23.28 .10	42.1 0.5
29.2	3.22 .42	88.1 1.9	11.93 1.69	81.2 2.0	5.67 .15	84.9 0.7	23.18 .10	41.5 0.5
Aug. 8.2	2.83 .37	85.9 2.3	10.31 1.54	78.9 2.5	5.53 .13	84.0 1.1	23.08 .10	41.0 0.5
18.1	2.49 .31	83.4 2.7	8.86 1.34	76.2 2.9	5.41 .11	82.7 1.5	22.99 .08	40.6 0.4
28.1	2.22 .24	80.5 3.1	7.62 1.11	73.2 3.2	5.30 .09	81.0 1.8	23.91 .07	40.2 0.3
Sept. 7.1	2.02 .16	77.2 3.4	6.63 .86	69.8 3.5	5.22 .06	79.1 2.1	22.85 .05	40.0 −0.1
17.0	1.90 −.07	73.7 3.6	5.90 .58	66.2 3.7	5.18 −.02	76.8 2.4	22.82 −.02	40.0 0.0
27.0	1.88 +.03	70.1 3.7	5.47 −.28	62.4 3.9	5.18 +.02	74.2 2.7	22.82 +.02	40.1 +0.2
Oct. 7.0	1.96 .13	66.3 3.8	5.35 +.04	58.5 3.9	5.22 .07	71.4 2.9	22.86 .06	40.4 0.5
17.0	2.14 .23	62.4 3.8	5.55 .37	54.5 3.9	5.31 .12	68.5 3.0	22.94 .10	41.0 0.7
26.9	2.42 .34	58.6 3.7	6.08 .70	50.6 3.8	5.45 .17	65.3 3.2	23.06 .15	41.9 1.0
Nov. 5.9	2.82 .44	55.0 3.5	6.95 1.03	46.9 3.6	5.64 .22	62.1 3.2	23.23 .19	43.0 1.3
15.9	3.31 .54	51.5 3.3	8.14 1.34	43.4 3.3	5.89 .27	59.0 3.1	23.45 .24	44.4 1.5
25.9	3.89 .63	48.4 2.9	9.63 1.63	40.3 2.9	6.18 .32	55.8 3.0	23.70 .27	46.1 1.8
Dec. 5.8	4.56 .70	45.7 2.5	11.40 1.87	37.6 2.5	6.52 .35	52.9 2.8	23.99 .30	47.9 1.9
15.8	5.29 .75	43.5 1.9	13.38 2.07	35.4 1.9	6.89 .38	50.2 2.5	24.31 .33	50.0 2.1
25.8	6.06 .78	41.8 1.4	15.53 2.20	33.7 1.3	7.28 .39	47.8 2.2	24.64 .34	52.1 2.1
35.7	6.84 +.79	40.8 −0.8	17.78 +2.27	32.7 −0.7	7.68 +.40	45.9 −1.8	24.98 +.34	54.2 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis. (*Spica.*)		ζ Virginis.		η Ursæ Majoris.		η Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$13^{h}\ 18^{m}$	$10^{\circ}\ 29'$	$13^{h}\ 28^{m}$	$0^{\circ}\ 2'$	$13^{h}\ 42^{m}$	$49^{\circ}\ 56'$	$13^{h}\ 48^{m}$	$19^{\circ}\ 1'$
	s	″	s	″	s	″	s	″
Jan. 0.8	29.13 +.34	44.6 +2.1	12.24 +.33	78.5 −2.2	31.15 +.44	39.5 −2.2	37.15 +.34	63.3 −2.3
10.8	29.47 .34	46.7 2.1	12.57 .33	76.3 2.1	31.60 .45	37.5 1.7	37.50 .34	61.1 2.1
20.7	29.80 .32	48.8 2.1	12.90 .32	74.3 1.9	32.05 .44	36.1 1.1	37.84 .34	59.1 1.7
30.7	30.12 .30	50.9 2.0	13.22 .30	72.5 1.7	32.48 .43	35.3 −0.5	38.17 .32	57.6 1.3
Feb. 9.7	30.41 .28	52.8 1.8	13.51 .28	70.8 1.5	32.90 .40	35.0 +0.1	38.49 .30	56.4 0.9
19.7	30.67 .24	54.5 1.6	13.78 .25	69.5 1.2	33.28 .36	35.5 0.7	38.78 .27	55.7 0.5
Mar. 1.6	30.90 .21	56.1 1.4	14.01 .22	68.4 0.9	33.62 .31	36.4 1.2	39.03 .24	55.4 −0.1
11.6	31.09 .17	57.4 1.2	14.21 .18	67.6 0.6	33.91 .26	37.9 1.7	39.25 .20	55.6 +0.3
21.6	31.25 .14	58.5 1.0	14.37 .14	67.2 0.3	34.14 .20	39.8 2.1	39.44 .17	56.1 0.7
31.5	31.37 .10	59.3 0.7	14.50 .11	66.9 −0.1	34.31 .14	42.1 2.4	39.59 .13	56.9 1.0
Apr. 10.5	31.45 .07	60.0 0.5	14.59 .08	66.9 +0.1	34.42 .09	44.5 2.5	39.70 .09	58.0 1.2
20.5	31.51 .04	60.4 0.3	14.66 .05	67.1 0.3	34.48 +.03	47.2 2.6	39.78 .06	59.3 1.4
30.5	31.54 +.02	60.7 +0.2	14.69 +.02	67.5 0.4	34.49 −.02	49.8 2.6	39.82 +.03	60.7 1.5
May 10.4	31.54 −.01	60.8 0.0	14.70 .00	68.0 0.5	34.45 .06	52.4 2.5	39.84 .00	62.2 1.5
20.4	31.52 .03	60.7 −0.1	14.69 −.02	68.6 0.6	34.36 .10	54.7 2.3	39.83 −.02	63.7 1.5
30.4	31.49 .05	60.6 0.2	14.65 .04	69.2 0.6	34.23 .14	56.9 2.0	39.80 .04	65.1 1.4
June 9.4	31.43 .07	60.3 0.3	14.60 .06	69.8 0.6	34.08 .17	58.7 1.6	39.74 .07	66.4 1.2
19.3	31.35 .08	60.0 0.4	14.53 .08	70.5 0.6	33.90 .19	60.2 1.3	39.66 .09	67.5 1.1
29.3	31.27 .09	59.5 0.5	14.45 .09	71.1 0.6	33.69 .21	61.2 0.8	39.57 .10	68.5 0.9
July 9.3	31.17 .10	59.0 0.5	14.35 .10	71.7 0.6	33.47 .23	61.8 +0.4	39.46 .11	69.3 0.6
19.2	31.06 .11	58.4 0.6	14.25 .11	72.2 0.5	33.24 .23	62.0 −0.1	39.34 .12	69.8 0.4
29.2	30.95 .11	57.9 0.6	14.14 .11	72.7 0.4	33.01 .23	61.6 0.5	39.21 .13	70.0 +0.1
Aug. 8.2	30.84 .11	57.3 0.6	14.03 .11	73.1 0.3	32.78 .23	60.9 1.0	39.08 .13	70.0 −0.1
18.2	30.74 .10	56.7 0.6	13.92 .10	73.3 +0.2	32.56 .21	59.6 1.4	38.96 .12	69.8 0.4
28.1	30.65 .08	56.2 0.5	13.83 .09	73.5 0.0	32.35 .19	58.0 1.9	38.84 .11	69.2 0.7
Sept. 7.1	30.58 .06	55.7 0.4	13.75 .07	73.4 −0.1	32.17 .16	55.9 2.3	38.74 .09	68.3 1.0
17.1	30.53 −.03	55.4 0.3	13.70 .04	73.2 0.3	32.03 .12	53.4 2.6	38.66 .07	67.2 1.3
27.1	30.52 .00	55.2 −0.1	13.67 −.01	72.8 0.5	31.93 .08	50.6 2.9	38.61 −.03	65.8 1.5
Oct. 7.0	30.54 +.04	55.2 +0.1	13.69 +.03	72.2 0.7	31.87 −.03	47.5 3.2	38.59 .00	64.1 1.8
17.0	30.60 .09	55.4 0.4	13.74 .08	71.3 1.0	31.87 +.03	44.2 3.4	38.61 +.04	62.2 2.1
27.0	30.72 .14	55.9 0.6	13.84 .12	70.2 1.2	31.93 .10	40.7 3.6	38.68 .09	60.0 2.3
Nov. 5.9	30.88 .18	56.7 0.9	13.98 .17	68.8 1.5	32.06 .16	37.1 3.6	38.80 .14	57.6 2.5
15.9	31.08 .23	57.7 1.2	14.17 .21	67.2 1.7	32.26 .22	33.4 3.6	38.97 .19	55.0 2.6
25.9	31.33 .27	59.1 1.5	14.41 .25	65.4 1.9	32.51 .29	29.9 3.5	39.19 .24	52.3 2.7
Dec. 5.9	31.62 .30	60.7 1.7	14.68 .29	63.4 2.1	32.83 .34	26.5 3.3	39.44 .27	49.6 2.7
15.8	31.93 .32	62.5 1.9	14.98 .31	61.3 2.1	33.19 .39	23.3 3.0	39.74 .31	46.9 2.6
25.8	32.27 .34	64.4 2.0	15.30 .33	59.1 2.2	33.60 .42	20.6 2.5	40.06 .33	44.3 2.5
35.8	32.61 +.34	66.5 +2.1	15.64 +.33	56.9 −2.2	34.03 +.44	18.3 −2.0	40.40 +.34	41.9 −2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Centauri.		* α Draconis.		α Bootis. (*Arcturus.*)		θ Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$13^{h}\ 54^{m}$	$59^{\circ}\ 45'$	$14^{h}\ 0^{m}$	$64^{\circ}\ 58'$	$14^{h}\ 9^{m}$	$19^{\circ}\ 50'$	$14^{h}\ 20^{m}$	$52^{\circ}\ 25'$
	s	″	s	″	s	″	s	″
Jan. 0.8	50.31 +.57	13.6 +0.6	56.06 +.58	43.2 −2.2	50.88 +.33	36.6 −2.5	51.11 +.42	66.0 −2.6
10.8	50.88 .57	14.5 1.1	56.66 .61	41.2 1.7	51.22 .34	34.3 2.2	51.55 .45	63.6 2.1
20.8	51.45 .56	15.8 1.6	57.28 .62	39.9 1.0	51.55 .34	32.2 1.9	52.00 .46	61.8 1.5
30.7	52.00 .54	17.6 2.0	57.90 .61	39.2 −0.4	51.89 .33	30.5 1.5	52.46 .45	60.6 0.9
Feb. 9.7	52.52 .50	19.8 2.3	58.49 .58	39.1 +0.3	52.21 .31	29.2 1.0	52.90 .43	60.0 −0.2
19.7	53.01 .46	22.3 2.6	59.05 .53	39.8 0.9	52.50 .28	28.4 0.6	53.32 .40	60.1 +0.4
Mar. 1.7	53.44 .41	25.1 2.8	59.55 .46	41.0 1.5	52.77 .25	28.0 −0.2	53.71 .36	60.7 0.9
11.6	53.82 .35	28.0 3.0	59.98 .39	42.8 2.0	53.01 .22	28.1 +0.3	54.05 .31	62.0 1.5
21.6	54.14 .29	31.0 3.1	60.32 .31	45.0 2.4	53.21 .18	28.6 0.6	54.33 .26	63.7 2.0
31.6	54.40 .23	34.1 3.1	60.59 .22	47.6 2.7	53.38 .15	29.3 0.9	54.56 .20	65.9 2.3
Apr. 10.5	54.60 .17	37.2 3.0	60.76 .13	50.5 2.9	53.51 .11	30.4 1.2	54.74 .14	68.4 2.6
20.5	54.75 .11	40.2 2.9	60.84 +.04	53.4 3.0	53.61 .08	31.7 1.4	54.85 .08	71.1 2.7
30.5	54.83 +.05	43.1 2.8	60.84 −.04	56.4 2.9	53.67 .05	33.2 1.5	54.90 +.03	73.9 2.8
May 10.5	54.85 .00	45.8 2.6	60.76 .12	59.3 2.8	53.71 +.02	34.7 1.5	54.91 −.02	76.6 2.7
20.4	54.82 −.06	48.3 2.4	60.60 .19	62.0 2.5	53.71 −.01	36.3 1.5	54.86 .07	79.3 2.6
30.4	54.73 .11	50.5 2.1	60.38 .25	64.4 2.2	53.69 .03	37.8 1.4	54.76 .12	81.7 2.3
June 9.4	54.59 .16	52.5 1.7	60.09 .31	66.4 1.8	53.64 .06	39.2 1.3	54.62 .16	83.9 2.0
19.4	54.41 .21	54.0 1.3	59.77 .35	68.0 1.4	53.57 .08	40.4 1.1	54.44 .19	85.7 1.6
29.3	54.18 .25	55.1 0.9	59.40 .38	69.1 0.9	53.48 .10	41.5 0.9	54.24 .22	87.2 1.2
July 9.3	53.91 .28	55.9 0.5	59.00 .40	69.8 +0.4	53.38 .11	42.3 0.7	54.00 .24	88.2 0.8
19.3	53.63 .30	56.2 +0.1	58.59 .42	69.9 −0.1	53.26 .13	42.9 0.4	53.75 .26	88.7 +0.3
29.2	53.32 .31	56.0 −0.4	58.16 .42	69.5 0.7	53.12 .14	43.2 +0.2	53.48 .27	88.8 −0.2
Aug. 8.2	53.00 .31	55.4 0.8	57.74 .41	68.6 1.2	52.98 .14	43.2 −0.1	53.21 .27	88.4 0.6
18.2	52.69 .30	54.3 1.2	57.34 .39	67.2 1.7	52.84 .14	43.0 0.4	52.94 .27	87.5 1.1
28.2	52.41 .27	52.9 1.6	56.96 .36	65.3 2.1	52.71 .13	42.4 0.7	52.68 .25	86.1 1.6
Sept. 7.1	52.15 .23	51.2 1.9	56.62 .32	62.9 2.5	52.59 .11	41.6 1.0	52.44 .23	84.3 2.0
17.1	51.95 .17	49.1 2.1	56.32 .26	60.2 2.9	52.49 .09	40.5 1.3	52.22 .19	82.0 2.4
27.1	51.80 .11	46.9 2.3	56.09 .20	57.1 3.3	52.41 .06	39.0 1.6	52.05 .15	79.4 2.8
Oct. 7.1	51.74 −.03	44.5 2.3	55.92 .13	53.7 3.5	52.37 −.02	37.3 1.9	51.92 .10	76.4 3.1
17.0	51.75 +.06	42.2 2.3	55.83 −.04	50.0 3.7	52.37 +.02	35.3 2.1	51.85 −.04	73.1 3.4
27.0	51.86 .15	39.9 2.2	55.83 +.05	46.2 3.9	52.41 .07	33.1 2.4	51.84 +.03	69.6 3.6
Nov. 6.0	52.05 .24	37.9 1.9	55.92 .14	42.3 3.9	52.51 .12	30.6 2.6	51.90 .09	65.9 3.7
15.9	52.34 .33	36.1 1.6	56.11 .24	38.4 3.8	52.65 .17	28.0 2.7	52.03 .17	62.2 3.7
25.9	52.70 .40	34.7 1.2	56.39 .33	34.6 3.7	52.84 .21	25.2 2.8	52.24 .23	58.5 3.7
Dec. 5.9	53.14 .47	33.8 0.7	56.77 .41	31.0 3.4	53.08 .26	22.4 2.8	52.50 .30	54.8 3.5
15.9	53.64 .52	33.3 −0.2	57.22 .49	27.8 3.0	53.35 .29	19.6 2.8	52.83 .35	51.4 3.2
25.8	54.18 .55	33.4 +0.3	57.74 .55	24.9 2.6	53.66 .32	16.8 2.6	53.21 .40	48.3 2.9
35.8	54.75 +.57	33.9 +0.8	58.32 +.59	22.6 −2.1	53.99 +.33	14.3 −2.4	53.63 +.43	45.7 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*5 Ursæ Minoris.		α² Centauri.		ε Bootis.		α² Libræ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 14 27	° ′ 76 15	h m 14 30	° ′ 60 18	h m 14 39	° ′ 27 36	h m 14 43	° ′ 15 30
	s	″	s	″	s	″	s	″
Jan. 0.8	47.55 +.87	20.6 −2.3	57.45 +.55	7.6 +0.1	25.07 +.32	31.7 −2.7	49.60 +.32	39.3 +1.6
10.8	48.47 .95	18.5 1.8	58.01 .57	7.9 0.6	25.40 .34	29.2 2.3	49.94 .34	40.9 1.7
20.8	49.45 1.00	17.0 1.2	58.58 .57	8.8 1.1	25.75 .35	27.0 1.9	50.28 .34	42.6 1.7
30.7	50.46 1.01	16.2 −0.5	59.14 .56	10.1 1.5	26.10 .34	25.3 1.5	50.62 .33	44.4 1.7
Feb. 9.7	51.46 .98	16.0 +0.2	59.70 .54	11.7 1.9	26.44 .33	24.1 1.0	50.94 .32	46.1 1.6
19.7	52.42 .92	16.6 0.8	60.22 .50	13.8 2.2	26.76 .31	23.4 −0.5	51.26 .30	47.7 1.5
Mar. 1.7	53.31 .83	17.7 1.5	60.69 .46	16.1 2.4	27.06 .28	23.2 0.0	51.55 .28	49.1 1.4
11.6	54.08 .72	19.5 2.0	61.13 .41	18.7 2.6	27.33 .25	23.5 +0.5	51.81 .25	50.4 1.2
21.6	54.74 .58	21.7 2.4	61.51 .35	21.4 2.8	27.57 .22	24.2 1.0	52.04 .22	51.6 1.0
31.6	55.24 .43	24.3 2.8	61.83 .30	24.2 2.9	27.77 .18	25.4 1.3	52.25 .19	52.5 0.9
Apr. 10.6	55.59 .27	27.2 3.0	62.10 .24	27.1 2.9	27.94 .15	26.9 1.6	52.43 .16	53.3 0.7
20.5	55.78 +.11	30.3 3.1	62.31 .18	30.0 2.9	28.06 .11	28.7 1.8	52.58 .13	53.9 0.5
30.5	55.80 −.05	33.3 3.1	62.46 .12	32.8 2.8	28.16 .08	30.6 2.0	52.69 .10	54.3 0.4
May 10.5	55.67 .21	36.4 2.9	62.54 +.06	35.6 2.7	28.21 .04	32.6 2.0	52.78 .07	54.6 0.2
20.4	55.39 .35	39.2 2.7	62.57 .00	38.1 2.5	28.24 +.01	34.7 2.0	52.84 .05	54.8 +0.1
30.4	54.98 .47	41.8 2.4	62.53 −.06	40.5 2.2	28.23 −.02	36.6 1.9	52.87 +.02	54.8 0.0
June 9.4	54.44 .59	44.0 2.0	62.44 .12	42.6 2.0	28.20 .05	38.5 1.7	52.88 −.01	54.8 −0.1
19.4	53.81 .68	45.8 1.6	62.29 .16	44.4 1.6	28.13 .08	40.1 1.5	52.85 .04	54.7 0.1
29.3	53.09 .75	47.1 1.1	62.09 .22	45.9 1.3	28.04 .10	41.5 1.3	52.80 .06	54.6 0.2
July 9.3	52.30 .81	47.9 +0.6	61.84 .27	47.0 0.9	27.93 .12	42.7 1.0	52.73 .09	54.3 0.3
19.3	51.47 .84	48.2 0.0	61.56 .30	47.6 +0.4	27.80 .14	43.5 0.7	52.63 .11	54.0 0.3
29.3	50.62 .86	48.0 −0.5	61.24 .33	47.9 0.0	27.65 .15	44.0 +0.3	52.52 .12	53.6 0.4
Aug. 8.2	49.76 .85	47.2 1.0	60.90 .34	47.7 −0.4	27.49 .16	44.2 0.0	52.39 .13	53.2 0.4
18.2	48.92 .82	45.9 1.5	60.56 .34	47.0 0.9	27.33 .16	44.0 −0.4	52.25 .14	52.8 0.4
28.2	48.11 .78	44.1 2.0	60.23 .32	45.9 1.3	27.17 .16	43.5 0.7	52.11 .13	52.3 0.5
Sept. 7.1	47.36 .71	41.9 2.5	59.92 .29	44.5 1.6	27.01 .14	42.6 1.1	51.98 .12	51.9 0.4
17.1	46.68 .63	39.2 2.9	59.66 .24	42.7 1.9	26.88 .12	41.3 1.4	51.87 .10	51.5 0.4
27.1	46.10 .52	36.1 3.2	59.44 .18	40.7 2.1	26.76 .10	39.7 1.8	51.78 .07	51.1 0.3
Oct. 7.1	45.63 .40	32.7 3.5	59.30 .10	38.4 2.3	26.68 .06	37.8 2.1	51.72 −.04	50.9 −0.2
17.0	45.30 .26	29.1 3.7	59.24 −.02	36.1 2.3	26.64 −.02	35.6 2.4	51.70 .00	50.8 0.0
27.0	45.11 −.11	25.2 3.9	59.26 +.07	33.8 2.3	26.65 +.03	33.1 2.6	51.73 +.05	50.9 +0.2
Nov. 6.0	45.07 +.05	21.3 3.9	59.38 .17	31.6 2.1	26.71 .08	30.3 2.8	51.81 .10	51.1 0.4
16.0	45.21 .21	17.3 3.9	59.60 .26	29.6 1.8	26.82 .14	27.4 3.0	51.94 .15	51.7 0.6
25.9	45.50 .38	13.5 3.7	59.90 .34	27.9 1.5	27.98 .19	24.4 3.1	52.12 .20	52.4 0.9
Dec. 5.9	45.96 .54	9.8 3.5	60.28 .42	26.5 1.1	27.19 .23	21.3 3.1	52.34 .25	53.4 1.1
15.9	46.57 .61	6.5 3.1	60.74 .48	25.7 0.7	27.45 .28	18.2 3.0	52.61 .29	54.7 1.3
25.8	47.32 .80	3.5 2.7	61.25 .53	25.2 −0.2	27.75 .31	15.4 2.8	52.92 .31	56.1 1.5
35.8	48.18 +.89	1.1 −2.2	61.80 +.56	25.3 +0.3	28.07 +.33	12.7 −2.5	53.24 +.33	57.7 +1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Ursæ Minoris.		β Bootis.		3 Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 14 51	° ′ 74 39	h m 14 57	° ′ 40 53	h m 15 10	° ′ 8 54	h m 15 19	° ′ 37 48
	s	″	s	″	s	″	s	″
Jan. 0.8	3.91 +.74	71.3 −2.6	8.24 +.34	22.4 −2.9	8.72 +.30	42.6 +1.7	40.02 +.31	75.6 −3.0
10.8	4.70 .82	68.9 2.1	8.60 .36	19.7 2.5	9.03 .32	44.7 1.7	40.34 .34	72.8 2.6
20.8	5.56 .88	67.1 1.5	8.97 .38	17.5 2.0	9.36 .33	46.1 1.7	40.70 .36	70.4 2.2
30.8	6.46 .90	65.9 0.8	9.36 .38	15.8 1.4	9.69 .33	47.7 1.6	41.06 .37	68.5 1.6
Feb. 9.7	7.37 .90	65.4 −0.1	9.74 .37	14.6 0.8	10.01 .32	49.3 1.5	41.43 .36	67.1 1.1
19.7	8.25 .86	65.6 +0.5	10.10 .35	14.1 −0.2	10.32 .30	50.7 1.3	41.78 .35	66.3 −0.5
Mar. 1.7	9.08 .79	66.5 1.2	10.45 .33	14.1 +0.3	10.62 .28	51.9 1.1	42.13 .33	66.1 +0.1
11.7	9.84 .70	67.9 1.7	10.76 .30	14.8 0.9	10.89 .26	52.9 0.9	42.44 .30	66.5 0.7
21.6	10.49 .59	69.9 2.2	11.04 .26	15.9 1.4	11.14 .24	53.7 0.7	42.73 .27	67.4 1.1
31.6	11.01 .46	72.4 2.6	11.28 .22	17.5 1.8	11.37 .21	54.3 0.4	42.98 .23	68.8 1.6
Apr. 10.6	11.41 .32	75.1 2.9	11.48 .17	19.5 2.1	11.56 .18	54.6 0.2	43.20 .20	70.6 2.0
20.5	11.66 .18	78.2 3.1	11.63 .13	21.8 2.4	11.73 .15	54.7 +0.1	43.38 .16	72.8 2.2
30.5	11.76 +.04	81.3 3.1	11.74 .09	24.3 2.5	11.87 .12	54.7 −0.1	43.51 .11	75.1 2.4
May 10.5	11.73 −.10	84.3 3.0	11.80 +.04	26.9 2.6	11.98 .10	54.6 0.2	43.61 .07	77.6 2.5
20.5	11.56 .23	87.3 2.9	11.83 .00	29.4 2.5	12.06 .07	54.3 0.3	43.66 +.03	80.2 2.5
30.4	11.26 .36	90.1 2.6	11.81 −.03	31.8 2.4	12.12 .04	54.0 0.4	43.67 .00	82.7 2.4
June 9.4	10.84 .47	92.5 2.3	11.76 .07	34.1 2.2	12.14 +.01	53.6 0.4	43.65 −.04	85.0 2.3
19.4	10.33 .56	94.6 1.9	11.67 .10	36.2 1.9	12.14 −.02	53.2 0.4	43.59 .08	87.2 2.0
29.4	9.72 .64	96.2 1.4	11.55 .13	37.9 1.6	12.10 .05	52.8 0.4	43.49 .11	89.1 1.7
July 9.3	9.05 .70	97.4 0.9	11.40 .16	39.3 1.2	12.04 .07	52.3 0.4	43.37 .14	90.7 1.4
19.3	8.32 .75	98.0 +0.4	11.22 .18	40.3 0.8	11.96 .10	51.9 0.4	43.21 .17	91.9 1.0
29.3	7.55 .77	98.1 −0.1	11.03 .20	40.9 +0.4	11.85 .12	51.5 0.4	43.03 .19	92.7 0.6
Aug. 8.2	6.77 .78	97.7 0.7	10.82 .21	41.1 0.0	11.73 .13	51.1 0.4	42.84 .20	93.2 +0.2
18.2	5.99 .77	96.8 1.2	10.60 .22	40.8 −0.5	11.59 .14	50.8 0.3	42.63 .21	93.2 −0.2
28.2	5.22 .74	95.3 1.7	10.39 .21	40.2 0.9	11.45 .14	50.5 0.3	42.41 .21	92.8 0.6
Sept. 7.2	4.50 .70	93.4 2.2	10.18 .20	39.0 1.4	11.31 .13	50.2 0.2	42.20 .20	91.9 1.1
17.1	3.83 .63	91.0 2.6	9.99 .18	37.4 1.8	11.18 .12	50.1 −0.1	42.01 .19	90.7 1.5
27.1	3.23 .54	88.2 3.0	9.82 .15	35.5 2.2	11.07 .09	50.0 0.0	41.83 .16	89.0 1.9
Oct. 7.1	2.74 .44	85.0 3.3	9.69 .11	33.1 2.5	11.00 .06	50.1 +0.2	41.68 .13	86.9 2.3
17.1	2.35 .32	81.5 3.6	9.61 .06	30.4 2.8	10.95 −.02	50.4 0.3	41.58 .08	84.4 2.6
27.0	2.09 .19	77.8 3.8	9.57 −.01	27.4 3.1	10.96 +.02	50.8 0.5	41.52 −.03	81.7 2.9
Nov. 6.0	1.98 −.05	73.9 3.9	9.59 +.05	24.2 3.3	11.00 .07	51.5 0.8	41.51 +.02	78.7 3.1
16.0	2.01 +.10	70.0 3.9	9.67 .11	20.8 3.5	11.10 .12	52.3 1.0	41.57 .08	75.4 3.3
25.9	2.19 .26	66.1 3.8	9.81 .17	17.3 3.5	11.25 .17	53.4 1.2	41.68 .14	72.0 3.4
Dec. 5.9	2.53 .41	62.3 3.6	10.01 .23	13.8 3.5	11.45 .22	54.7 1.4	41.84 .20	68.6 3.4
15.9	3.01 .55	58.8 3.3	10.26 .28	10.4 3.3	11.69 .26	56.2 1.5	42.07 .25	65.2 3.3
25.9	3.63 .67	55.6 2.9	10.56 .32	7.2 3.0	11.97 .29	57.8 1.7	42.34 .29	62.0 3.1
35.8	4.35 +.77	52.9 −2.4	10.89 +.35	4.3 −2.7	12.27 +.31	59.5 +1.7	42.65 +.32	59.0 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*γ^2 Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ε Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 15 20	° ′ 72 16	h m 15 29	° ′ 27 8	h m 15 37	° ′ 6 49	h m 15 44	° ′ 4 51
	s	″	s	″	s	″	s	″
Jan. 0.9	54.49 +.58	54.9 −2.9	17.02 +.29	29.4 −2.8	59.02 +.28	34.1 −2.2	27.39 +.27	39.6 −2.2
10.8	55.12 .68	52.2 2.5	17.32 .31	26.7 2.5	59.30 .30	31.9 2.1	27.68 .30	37.4 2.1
20.8	55.84 .74	50.0 1.9	17.65 .33	24.3 2.2	59.61 .31	29.8 1.9	27.98 .31	35.4 1.9
30.8	56.60 .78	48.4 1.3	17.98 .34	22.3 1.8	59.93 .32	28.0 1.7	28.30 .32	33.7 1.7
Feb. 9.8	57.39 .79	47.5 −0.6	18.32 .33	20.8 1.3	60.25 .31	26.4 1.4	28.61 .31	32.1 1.4
19.7	58.18 .77	47.2 +0.1	18.65 .32	19.8 0.8	60.56 .30	25.2 1.1	28.93 .31	30.8 1.1
Mar. 1.7	58.94 .73	47.7 0.8	18.97 .31	19.2 −0.2	60.86 .29	24.3 0.7	29.23 .29	29.9 0.7
11.7	59.64 .67	48.7 1.4	19.26 .28	19.3 +0.3	61.14 .27	23.8 −0.3	29.51 .27	29.3 0.4
21.7	60.27 .58	50.4 1.9	19.54 .26	19.8 0.7	61.40 .25	23.6 0.0	29.78 .25	29.1 −0.1
31.6	60.81 .48	52.6 2.4	19.78 .23	20.8 1.2	61.64 .22	23.8 +0.3	30.02 .23	29.2 +0.2
Apr. 10.6	61.24 .37	55.1 2.7	19.99 .20	22.2 1.5	61.85 .20	24.3 0.6	30.24 .20	29.6 0.5
20.6	61.55 .25	58.0 3.0	20.17 .16	23.9 1.8	62.03 .17	25.0 0.8	30.43 .18	30.3 0.7
30.5	61.74 .13	61.1 3.1	20.31 .13	25.8 2.0	62.19 .14	26.0 1.0	30.59 .15	31.1 0.9
May 10.5	61.81 +.01	64.2 3.1	20.42 .09	27.9 2.1	62.32 .11	27.1 1.2	30.72 .12	32.2 1.1
20.5	61.75 −.11	67.3 3.0	20.50 .06	30.1 2.2	62.42 .08	28.3 1.2	30.83 .09	33.3 1.1
30.5	61.59 .22	70.2 2.8	20.54 +.02	32.2 2.1	62.49 .05	29.6 1.2	30.91 .06	34.5 1.2
June 9.4	61.31 .33	73.0 2.6	20.55 −.01	34.3 2.0	62.53 +.02	30.8 1.2	30.95 +.03	35.6 1.2
19.4	60.93 .42	75.4 2.2	20.52 .04	36.2 1.8	62.53 −.01	32.0 1.2	30.97 .00	36.8 1.1
29.4	60.47 .50	77.4 1.8	20.46 .07	38.0 1.6	62.51 .04	33.2 1.1	30.95 −.03	37.8 1.0
July 9.4	59.93 .57	78.9 1.3	20.37 .10	39.5 1.3	62.46 .07	34.2 0.9	30.90 .06	38.8 0.9
19.3	59.33 .62	80.0 0.8	20.26 .13	40.7 1.0	62.38 .09	35.0 0.8	30.83 .09	39.6 0.8
29.3	58.68 .66	80.6 +0.3	20.12 .15	41.5 0.7	62.27 .11	35.7 0.6	30.73 .11	40.3 0.6
Aug. 8.3	58.00 .69	80.7 −0.2	19.96 .17	42.1 +0.4	62.15 .13	36.3 0.4	30.61 .13	40.9 0.4
18.2	57.30 .69	80.3 0.7	19.78 .18	42.3 0.0	62.01 .15	36.6 +0.2	30.46 .14	41.2 0.3
28.2	56.61 .68	79.3 1.2	19.60 .18	42.1 −0.3	61.86 .15	36.7 0.0	30.32 .15	41.4 +0.1
Sept. 7.2	55.94 .66	77.8 1.7	19.42 .17	41.6 0.7	61.71 .15	36.7 −0.2	30.16 .15	41.4 −0.1
17.2	55.30 .61	75.8 2.2	19.25 .16	40.7 1.1	61.56 .14	36.4 0.4	30.02 .14	41.2 0.3
27.1	54.72 .55	73.4 2.6	19.10 .14	39.4 1.4	61.43 .12	35.9 0.6	29.89 .12	40.7 0.6
Oct. 7.1	54.21 .46	70.5 3.0	18.97 .11	37.8 1.8	61.33 .09	35.1 0.9	29.78 .09	40.1 0.8
17.1	53.79 .37	67.3 3.4	18.88 .07	35.8 2.1	61.26 .05	34.1 1.1	29.70 .06	39.2 1.0
27.1	53.47 .25	63.8 3.6	18.83 −.02	33.5 2.4	61.22 −.01	32.8 1.4	29.67 −.01	38.0 1.2
Nov. 6.0	53.28 −.13	60.1 3.8	18.83 +.03	31.0 2.7	61.24 +.04	31.3 1.6	29.68 +.03	36.7 1.5
16.0	53.22 .00	56.2 3.9	18.89 .08	28.2 2.9	61.30 .09	29.6 1.8	29.73 .08	35.1 1.7
26.0	53.28 +.14	52.3 3.9	18.99 .13	25.2 3.0	61.41 .14	27.6 2.0	29.84 .13	33.2 1.9
Dec. 5.9	53.49 .27	48.4 3.8	19.15 .18	22.1 3.1	61.57 .18	25.6 2.1	29.99 .18	31.3 2.0
15.9	53.83 .40	44.8 3.6	19.36 .23	19.1 3.0	61.78 .22	23.4 2.2	30.19 .22	29.2 2.1
25.9	54.30 .52	41.3 3.2	19.61 .27	16.1 2.9	62.02 .26	21.1 2.2	30.43 .26	27.0 2.1
35.9	54.88 +.62	38.3 −2.8	19.90 +.30	13.2 −2.7	62.30 +.29	18.9 −2.2	30.71 +.28	24.9 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β^1 Scorpii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 15 48	° ′ 78 10	h m 15 52	° ′ 27 14	h m 15 52	° ′ 22 15	h m 15 58	° ′ 19 27
	s	″	s	″	s	″	s	″
Jan. 0.9	34.98 +.71	48.4 −3.1	18.13 +.27	42.5 −2.9	47.45 +.30	24.2 +0.9	1.14 +.29	18.1 +1.0
10.9	35.77 .86	45.5 2.7	18.42 .30	39.8 2.6	47.76 .32	25.2 1.1	1.44 .31	19.2 1.1
20.8	36.70 .98	43.1 2.1	18.73 .32	37.3 2.3	48.09 .34	26.3 1.2	1.76 .33	20.4 1.2
30.8	37.73 1.06	41.2 1.5	19.06 .33	35.2 1.9	48.43 .34	27.5 1.2	2.10 .34	21.6 1.2
Feb. 9.8	38.83 1.11	40.0 0.9	19.39 .33	33.5 1.4	48.78 .34	28.8 1.2	2.44 .34	22.9 1.2
19.8	39.96 1.12	39.5 −0.2	19.72 .33	32.4 0.9	49.12 .33	30.0 1.2	2.77 .33	24.1 1.2
Mar. 1.7	41.06 1.08	39.6 +0.5	20.04 .31	31.8 −0.4	49.44 .32	31.2 1.1	3.10 .32	25.2 1.1
11.7	42.12 1.01	40.4 1.1	20.35 .29	31.7 +0.2	49.76 .30	32.3 1.1	3.40 .30	26.2 1.0
21.7	43.06 .90	41.8 1.7	20.63 .27	32.1 0.7	50.05 .28	33.3 1.0	3.70 .28	27.1 0.8
31.6	43.92 .77	43.8 2.2	20.89 .24	33.0 1.1	50.32 .26	34.2 0.8	3.97 .26	27.9 0.7
Apr. 10.6	44.62 .62	46.2 2.6	21.12 .22	34.3 1.5	50.57 .24	35.0 0.7	4.21 .24	28.6 0.6
20.6	45.16 .44	48.9 2.9	21.32 .18	36.0 1.8	50.79 .21	35.7 0.6	4.44 .21	29.1 0.5
30.6	45.51 .26	51.9 3.1	21.49 .15	37.9 2.0	50.99 .18	36.3 0.6	4.63 .18	29.5 0.4
May 10.5	45.69 +.08	55.1 3.1	21.62 .12	40.0 2.2	51.16 .15	36.8 0.5	4.80 .15	29.8 0.3
20.5	45.67 −.11	58.2 3.1	21.72 .08	42.3 2.2	51.29 .12	37.2 0.4	4.94 .12	30.1 0.2
30.5	45.47 .28	61.2 2.9	21.78 .05	44.5 2.2	51.39 .09	37.6 0.3	5.04 .09	30.3 0.2
June 9.5	45.11 .45	64.1 2.7	21.81 +.01	46.7 2.1	51.46 .05	37.9 0.3	5.12 .06	30.4 0.1
19.4	44.58 .60	66.7 2.4	21.80 −.03	48.8 2.0	51.50 +.02	38.1 0.2	5.16 +.02	30.5 +0.1
29.4	43.90 .74	68.9 2.0	21.76 .06	50.6 1.8	51.50 −.02	38.3 0.1	5.16 −.01	30.5 0.0
July 9.4	43.10 .86	70.7 1.6	21.68 .09	52.3 1.5	51.46 .05	38.4 +0.1	5.13 .05	30.5 0.0
19.3	42.19 .95	72.1 1.1	21.58 .12	53.7 1.2	51.39 .08	38.5 0.0	5.06 .08	30.5 −0.1
29.3	41.19 1.03	73.0 0.6	21.44 .15	54.7 0.9	51.29 .11	38.4 −0.1	4.97 .11	30.4 0.1
Aug. 8.3	40.14 1.08	73.4 +0.1	21.28 .17	55.5 0.6	51.17 .13	38.3 0.2	4.85 .13	30.2 0.2
18.3	39.04 1.10	73.3 −0.4	21.11 .18	55.8 +0.2	51.02 .15	38.1 0.2	4.71 .15	30.0 0.2
28.2	37.93 1.10	72.6 0.9	20.92 .19	55.9 −0.2	50.86 .16	37.8 0.3	4.55 .16	29.7 0.3
Sept. 7.2	36.84 1.08	71.5 1.4	20.73 .19	55.5 0.5	50.70 .16	37.5 0.4	4.39 .16	29.5 0.3
17.2	35.78 1.03	69.8 1.9	20.55 .18	54.8 0.9	50.55 .15	37.1 0.4	4.24 .15	29.1 0.3
27.2	34.79 .94	67.7 2.3	20.38 .16	53.7 1.3	50.41 .13	36.7 0.4	4.10 .13	28.8 0.3
Oct. 7.1	33.89 .84	65.2 2.7	20.23 .13	52.2 1.7	50.29 .10	36.3 0.4	3.98 .10	28.5 0.3
17.1	33.11 .71	62.2 3.1	20.12 .09	50.4 2.0	50.21 .06	35.9 0.3	3.90 .06	28.3 0.2
27.1	32.47 55	59.0 3.4	20.05 −.05	48.2 2.3	50.17 −.01	35.6 0.3	3.86 −.02	28.1 −0.1
Nov. 6.0	32.00 .38	55.4 3.6	20.02 .00	45.7 2.6	50.18 +.04	35.4 −0.1	3.86 +.03	28.1 0.0
16.0	31.71 −.19	51.7 3.8	20.05 +.05	43.0 2.8	50.25 .09	35.3 0.0	3.92 .08	28.2 +0.2
26.0	31.62 +.01	47.8 3.8	20.13 .11	40.1 3.0	50.37 .14	35.4 +0.2	4.03 .14	28.5 0.4
Dec. 6.0	31.72 .21	44.0 3.8	20.26 .16	37.1 3.0	50.54 .20	35.8 0.4	4.20 .19	29.0 0.6
15.9	32.04 .41	40.3 3.6	20.45 .21	34.0 3.0	50.76 .24	36.3 0.6	4.41 .23	29.6 0.8
25.9	32.54 .59	36.8 3.3	20.68 .25	31.0 3.0	51.02 .28	37.0 0.8	4.66 .27	30.5 0.9
35.9	33.22 +.76	33.6 −2.9	20.94 +.28	28.1 −2.8	51.32 +.31	37.9 +1.0	4.95 +.30	31.5 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ω Draconis.		μ Herculis.		*ψ¹ Draconis (*pr.*)		γ Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$17^{h}\ 37^{m}$	$68^{\circ}\ 48'$	$17^{h}\ 41^{m}$	$27^{\circ}\ 47'$	$17^{h}\ 44^{m}$	$72^{\circ}\ 12'$	$17^{h}\ 53^{m}$	$51^{\circ}\ 29'$
	s	"	s	"	s	"	s	"
Jan. 1.0	38.38 +.18	48.0 −3.7	27.18 +.16	41.0 −2.9	8.10 +.17	29.2 −3.7	37.06 +.14	68.5 −3.6
10.9	38.62 .29	44.4 3.5	27.36 .20	38.1 2.8	8.34 .30	25.6 3.5	37.23 .20	64.9 3.4
20.9	38.96 .39	41.1 3.2	27.58 .24	35.3 2.6	8.70 .42	22.2 3.2	37.46 .26	61.6 3.2
30.9	39.40 .48	38.1 2.8	27.84 .27	32.8 2.3	9.18 .53	19.2 2.8	37.75 .31	58.6 2.8
Feb. 9.8	39.91 .55	35.6 2.2	28.11 .29	30.6 1.9	9.76 .62	16.6 2.3	38.08 .35	56.0 2.4
19.8	40.49 .60	33.6 1.6	28.41 .30	28.9 1.5	10.42 .68	14.5 1.7	38.44 .38	53.9 1.8
Mar. 1.8	41.12 .63	32.3 1.0	28.72 .31	27.7 1.0	11.12 .73	13.1 1.1	38.83 .40	52.4 1.2
11.8	41.76 .64	31.6 −0.3	29.04 .31	27.0 −0.4	11.87 .75	12.4 −0.4	39.23 .40	51.5 −0.5
21.7	42.40 .64	31.6 +0.3	29.35 .31	26.8 +0.1	12.62 .74	12.3 +0.2	39.64 .40	51.3 +0.1
31.7	43.03 .61	32.3 1.0	29.66 .30	27.2 0.6	13.35 .71	12.9 0.9	40.04 .39	51.8 0.7
Apr. 10.7	43.62 .56	33.6 1.6	29.96 .29	28.1 1.1	14.04 .66	14.1 1.5	40.42 .37	52.8 1.3
20.7	44.16 .50	35.4 2.0	30.24 .27	29.4 1.5	14.67 .59	15.8 2.0	40.79 .35	54.4 1.9
30.6	44.63 .43	37.8 2.5	30.50 .25	31.1 1.9	15.22 .50	18.1 2.5	41.12 .31	56.6 2.3
May 10.6	45.01 .34	40.5 2.9	30.73 .22	33.2 2.2	15.68 .40	20.8 2.8	41.41 .27	59.1 2.7
20.6	45.31 .25	43.5 3.1	30.94 .19	35.5 2.4	16.02 .29	23.8 3.1	41.65 .22	61.9 3.0
30.5	45.51 .15	46.8 3.3	31.11 .15	38.0 2.5	16.26 .17	26.9 3.2	41.84 .17	65.0 3.1
June 9.5	45.61 +.05	50.1 3.3	31.24 .11	40.5 2.5	16.37 +.05	30.2 3.3	41.98 .11	68.2 3.2
19.5	45.61 −.06	53.4 3.3	31.34 .07	43.0 2.5	16.36 −.07	33.5 3.2	42.06 +.05	71.4 3.2
29.5	45.50 .16	56.6 3.1	31.39 +.03	45.5 2.4	16.23 .19	36.7 3.1	42.08 −.01	74.6 3.1
July 9.4	45.29 .25	59.6 2.9	31.40 −.01	47.8 2.2	15.98 .31	39.7 2.9	42.04 .07	77.6 2.9
19.4	44.99 .34	62.3 2.6	31.36 .05	49.9 2.0	15.61 .41	42.5 2.6	41.94 .13	80.4 2.6
29.4	44.61 .43	64.7 2.2	31.29 .09	51.8 1.7	15.15 .51	45.0 2.3	41.78 .18	82.9 2.3
Aug. 8.4	44.14 .50	66.8 1.8	31.18 .13	53.4 1.4	14.59 .60	47.1 1.9	41.58 .23	85.0 1.9
18.3	43.61 .56	68.4 1.4	31.03 .16	54.6 1.1	13.96 .67	48.7 1.4	41.33 .27	86.7 1.5
28.3	43.03 .60	69.5 0.9	30.85 .19	55.5 0.7	13.26 .72	49.9 1.0	41.03 .30	88.1 1.1
Sept. 7.3	42.41 .63	70.1 +0.4	30.65 .20	56.1 +0.3	12.51 .76	50.6 +0.5	40.72 .33	88.9 0.6
17.2	41.77 .64	70.3 −0.1	30.44 .21	56.2 0.0	11.74 .78	50.9 −0.1	40.38 .34	89.3 +0.1
27.2	41.12 .64	69.9 0.7	30.23 .21	56.0 −0.4	10.96 .77	50.5 0.6	40.03 .34	89.1 −0.4
Oct. 7.2	40.49 .61	68.9 1.2	30.03 .20	55.4 0.8	10.19 .75	49.7 1.1	39.70 .33	88.5 0.9
17.2	39.89 .57	67.5 1.7	29.84 .18	54.3 1.2	9.46 .70	48.3 1.6	39.38 .31	87.3 1.4
27.1	39.34 .51	65.5 2.2	29.67 .15	52.9 1.6	8.79 .64	46.4 2.1	39.09 .27	85.6 1.9
Nov. 6.1	38.86 .44	63.1 2.6	29.54 .11	51.1 2.0	8.19 .55	44.1 2.6	38.84 .22	83.5 2.3
16.1	38.47 .34	60.3 3.0	29.46 .06	48.9 2.3	7.68 .45	41.3 3.0	38.64 .17	80.9 2.8
26.1	38.17 .24	57.1 3.3	29.42 −.01	46.5 2.6	7.29 .33	38.2 3.3	38.50 .11	78.0 3.1
Dec. 6.0	37.98 .13	53.6 3.6	29.43 +.04	43.8 2.8	7.02 .20	34.7 3.5	38.43 −.04	74.7 3.3
16.0	37.91 −.01	49.9 3.7	29.49 .09	40.9 2.9	6.89 −.06	31.1 3.7	38.42 +.03	71.3 3.5
26.0	37.95 +.11	46.2 3.7	29.60 .14	38.0 3.0	6.90 +.08	27.4 3.7	38.49 .10	67.7 3.6
35.9	38.12 +.22	42.5 −3.6	29.76 +.18	35.0 −2.9	7.05 +.21	23.7 −3.6	38.62 +.16	64.1 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Draconis.		*A Draconis.		ζ Ophiuchi.		*α Trianguli Australis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$16^{h}\ 22^{m}$	$61^{\circ}\ 47'$	$16^{h}\ 28^{m}$	$69^{\circ}\ 2'$	$16^{h}\ 30^{m}$	$10^{\circ}\ 18'$	$16^{h}\ 35^{m}$	$68^{\circ}\ 47'$
	s	″	s	″	s	″	s	″
Jan. 0.9	14.19 +.32	55.3 −3.5	11.66 +.36	21.8 −3.5	7.91 +.25	27.8 +1.3	9.18 +.56	18.3 −1.6
10.9	14.54 .39	52.0 3.1	12.07 .46	18.4 3.1	8.18 .28	29.1 1.4	9.78 .64	16.9 1.3
20.8	14.96 .45	49.1 2.6	12.58 .54	15.5 2.6	8.47 .30	30.5 1.3	10.46 .71	15.8 0.9
30.8	15.44 .49	46.7 2.1	13.15 .60	13.1 2.1	8.78 .31	31.8 1.3	11.20 .75	15.1 −0.5
Feb. 9.8	15.94 .52	44.9 1.5	13.78 .64	11.3 1.5	9.10 .32	33.1 1.2	11.96 .77	14.8 0.0
19.8	16.47 .53	43.7 0.8	14.44 .66	10.2 0.8	9.41 .32	34.2 1.0	12.75 .78	15.0 +0.4
Mar. 1.7	16.99 .52	43.3 −0.1	15.11 .66	9.7 −0.1	9.73 .31	35.1 0.8	13.53 .77	15.5 0.7
11.7	17.51 .50	43.4 +0.5	15.76 .64	9.9 +0.5	10.03 .30	35.8 0.6	14.29 .75	16.5 1.1
21.7	17.99 .46	44.3 1.2	16.39 .60	10.8 1.2	10.33 .28	36.3 0.4	15.04 .72	17.8 1.5
31.7	18.43 .42	45.8 1.7	16.96 .54	12.2 1.7	10.60 .27	36.7 +0.2	15.74 .68	19.4 1.8
Apr. 10.6	18.83 .36	47.8 2.2	17.46 .46	14.2 2.2	10.86 .25	36.8 0.0	16.39 .63	21.3 2.0
20.6	19.16 .30	50.2 2.6	17.88 .38	16.7 2.6	11.10 .23	36.7 −0.1	16.99 .56	23.5 2.3
30.6	19.42 .23	53.0 2.9	18.21 .28	19.5 2.9	11.31 .20	36.5 0.3	17.51 .49	25.8 2.4
May 10.5	19.62 .16	56.0 3.1	18.45 .19	22.6 3.1	11.50 .17	36.2 0.4	17.97 .41	28.3 2.6
20.5	19.74 .08	59.1 3.2	18.58 +.08	25.7 3.2	11.66 .14	35.8 0.4	18.33 .32	31.0 2.6
30.5	19.78 +.01	62.3 3.1	18.62 −.02	28.9 3.2	11.79 .11	35.4 0.5	18.61 .23	33.6 2.7
June 9.5	19.75 −.07	65.4 3.0	18.55 .12	32.1 3.0	11.89 .08	34.9 0.5	18.80 .13	36.3 2.7
19.4	19.65 .14	68.3 2.8	18.38 .21	35.0 2.8	11.95 .05	34.4 0.5	18.88 +.03	39.0 2.6
29.4	19.47 .21	71.0 2.5	18.12 .30	37.7 2.5	11.98 +.01	34.0 0.4	18.87 −.06	41.5 2.4
July 9.4	19.23 .27	73.3 2.1	17.77 .38	40.1 2.2	11.97 −.03	33.5 0.4	18.75 .16	43.7 2.2
19.4	18.94 .32	75.3 1.7	17.35 .46	42.1 1.8	11.93 .06	33.1 0.4	18.54 .25	45.8 1.9
29.3	18.59 .37	76.8 1.3	16.85 .52	43.7 1.3	11.85 .09	32.8 0.3	18.25 .33	47.5 1.5
Aug. 8.3	18.20 .41	77.9 0.8	16.31 .57	44.7 0.8	11.75 .12	32.5 0.3	17.88 .40	48.9 1.1
18.3	17.78 .43	78.4 +0.3	15.72 .60	45.3 +0.3	11.62 .14	32.2 0.2	17.44 .45	49.8 0.7
28.2	17.33 .45	78.5 −0.2	15.11 .62	45.4 −0.2	11.47 .15	32.0 0.2	16.97 .49	50.3 +0.2
Sept. 7.2	16.88 .45	78.0 0.7	14.48 .62	45.0 0.7	11.32 .16	31.8 0.1	16.47 .50	50.2 −0.2
17.2	16.43 .44	77.0 1.2	13.86 .61	44.0 1.2	11.16 .15	31.7 −0.1	15.98 .48	49.7 0.7
27.2	16.01 .41	75.5 1.7	13.26 .58	42.5 1.7	11.01 .14	31.7 0.0	15.50 .45	48.8 1.2
Oct. 7.1	15.61 .37	73.6 2.2	12.71 .53	40.5 2.2	10.88 .12	31.8 +0.1	15.08 .38	47.4 1.6
17.1	15.26 .32	71.1 2.6	12.21 .46	38.1 2.6	10.77 .09	31.9 0.2	14.73 .30	45.6 1.9
27.1	14.97 .25	68.3 3.0	11.79 .38	35.3 3.0	10.70 −.05	32.2 0.4	14.47 .21	43.5 2.2
Nov. 6.1	14.76 .18	65.1 3.3	11.45 .28	32.1 3.4	10.68 .00	32.7 0.5	14.32 −.09	41.2 2.4
16.0	14.62 −.09	61.6 3.6	11.22 .18	28.6 3.6	10.70 +.05	33.3 0.7	14.29 +.04	38.7 2.5
26.0	14.58 .00	57.9 3.8	11.10 −.06	24.9 3.8	10.78 .10	34.1 0.8	14.39 .16	36.3 2.5
Dec. 6.0	14.62 +.09	54.1 3.8	11.10 +.06	21.0 3.8	10.90 .15	35.0 1.0	14.62 .29	33.8 2.3
15.9	14.76 .18	50.2 3.8	11.22 .18	17.2 3.8	11.07 .19	36.1 1.2	14.97 .41	31.6 2.1
25.9	14.99 .27	46.5 3.6	11.46 .29	13.5 3.6	11.28 .23	37.3 1.3	15.43 .51	29.5 1.9
35.9	15.30 +.34	43.0 −3.4	11.81 +.40	10.0 −3.4	11.53 +.26	38.6 +1.4	15.99 +.60	27.8 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Herculis.		κ Ophiuchi.		d Herculis.		*ε Ursæ Minoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 16 38	° ′ 39 9	h m 16 51	° ′ 9 34	h m 16 56	° ′ 33 44	h m 16 58	° ′ 82 14
	s	″	s	″	s	″	s	″
Jan. 0.9	30.54 +.24	45.9 −3.3	37.39 +.22	23.4 −2.2	52.86 +.21	65.5 −3.2	56.90 +.54	22.0 −3.4
10.9	30.80 .28	42.7 3.0	37.62 .25	21.1 2.2	53.09 .25	62.4 3.0	57.59 .83	18.7 3.2
20.9	31.09 .31	39.8 2.6	37.88 .27	19.0 2.0	53.36 .28	59.6 2.6	58.56 1.08	15.7 2.8
30.8	31.41 .33	37.4 2.2	38.17 .29	17.2 1.7	53.66 .31	57.1 2.2	59.76 1.30	13.1 2.3
Feb. 9.8	31.76 .35	35.4 1.7	38.46 .30	15.6 1.5	53.98 .32	55.1 1.7	61.16 1.46	11.1 1.7
19.8	32.11 .35	34.0 1.1	38.77 .30	14.3 1.1	54.31 .33	53.5 1.2	62.69 1.57	9.7 1.1
Mar. 1.8	32.47 .35	33.1 −0.5	39.07 .30	13.3 0.7	54.64 .33	52.5 0.7	64.30 1.62	8.9 −0.4
11.7	32.81 .34	32.9 +0.1	39.37 .29	12.8 −0.3	54.98 .33	52.2 −0.1	65.93 1.61	8.8 +0.2
21.7	33.15 .32	33.3 0.7	39.66 .28	12.6 +0.1	55.30 .31	52.3 +0.4	67.51 1.53	9.4 0.9
31.7	33.46 .30	34.3 1.2	39.94 .27	12.9 0.4	55.60 .30	53.1 1.0	69.00 1.41	10.5 1.4
Apr. 10.7	33.75 .27	35.7 1.7	40.20 .25	13.5 0.8	55.89 .27	54.3 1.5	70.33 1.23	12.3 2.0
20.6	34.00 .24	37.6 2.1	40.44 .23	14.4 1.0	56.15 .25	56.0 1.9	71.47 1.02	14.5 2.4
30.6	34.22 .20	39.9 2.4	40.66 .21	15.6 1.3	56.38 .22	58.0 2.2	72.37 .78	17.0 2.7
May 10.6	34.41 .16	42.4 2.6	40.85 .18	17.0 1.5	56.58 .18	60.4 2.4	73.02 .51	19.9 3.0
20.5	34.55 .12	45.1 2.7	41.01 .15	18.5 1.6	56.75 .14	62.9 2.6	73.39 +.23	23.0 3.1
30.5	34.65 .08	47.9 2.8	41.15 .12	20.1 1.6	56.87 .10	65.6 2.7	73.48 −.05	26.1 3.1
June 9.5	34.71 +.03	50.7 2.7	41.25 .08	21.7 1.6	56.95 .06	68.2 2.6	73.29 .33	29.3 3.1
19.5	34.72 −.01	53.3 2.6	41.31 .05	23.3 1.5	57.00 +.02	70.8 2.5	72.82 .60	32.3 2.9
29.4	34.69 .05	55.8 2.4	41.34 +.01	24.8 1.5	56.99 −.02	73.3 2.4	72.09 .85	35.1 2.7
July 9.4	34.61 .10	58.1 2.1	41.34 −.02	26.2 1.3	56.95 .06	75.5 2.1	71.12 1.08	37.6 2.4
19.4	34.50 .13	60.0 1.8	41.29 .06	27.5 1.1	56.87 .10	77.5 1.8	69.93 1.29	39.8 2.0
29.4	34.34 .17	61.6 1.4	41.22 .09	28.5 0.9	56.74 .14	79.2 1.5	68.55 1.46	41.6 1.6
Aug. 8.3	34.15 .20	62.9 1.0	41.11 .12	29.4 0.7	56.59 .17	80.6 1.2	67.01 1.60	43.0 1.1
18.3	33.94 .22	63.7 0.6	40.98 .14	30.0 0.5	56.40 .20	81.6 0.8	65.34 1.71	43.9 0.7
28.3	33.71 .24	64.1 +0.2	40.82 .16	30.4 +0.3	56.19 .22	82.1 +0.4	63.58 1.78	44.4 +0.2
Sept. 7.2	33.47 .25	64.0 −0.3	40.66 .17	30.6 0.0	55.97 .22	82.3 0.0	61.77 1.81	44.3 −0.3
17.2	33.22 .24	63.5 0.7	40.49 .17	30.5 −0.2	55.75 .22	82.0 −0.5	59.96 1.80	43.7 0.8
27.2	32.98 .23	62.6 1.2	40.32 .16	30.1 0.5	55.52 .21	81.4 0.9	58.17 1.75	42.7 1.3
Oct. 7.2	32.77 .20	61.1 1.6	40.17 .14	29.5 0.7	55.32 .19	80.2 1.3	56.46 1.65	41.1 1.8
17.1	32.58 .17	59.3 2.0	40.04 .11	28.6 1.0	55.13 .17	78.7 1.7	54.87 1.51	39.1 2.2
27.1	32.43 .12	57.1 2.4	39.95 .08	27.5 1.3	54.99 .13	76.7 2.1	53.43 1.34	36.6 2.7
Nov. 6.1	32.32 .08	54.4 2.8	39.89 −.04	26.1 1.5	54.89 .08	74.4 2.5	52.20 1.12	33.8 3.0
16.1	32.27 −.02	51.5 3.0	39.87 +.01	24.5 1.7	54.82 −.03	71.8 2.8	51.20 .87	30.6 3.3
26.0	32.28 +.04	48.4 3.3	39.91 .06	22.6 1.9	54.82 +.02	68.9 3.0	50.47 .58	27.2 3.5
Dec. 6.0	32.34 .10	45.0 3.4	39.99 .11	20.6 2.1	54.87 .08	65.8 3.2	50.03 −.28	23.6 3.6
16.0	32.47 .15	41.6 3.4	40.13 .15	18.4 2.2	54.97 .13	62.6 3.2	49.90 +.03	19.9 3.6
25.9	32.65 .21	38.2 3.3	40.30 .20	16.2 2.2	55.13 .18	59.4 3.2	50.09 .34	16.3 3.5
35.9	32.88 +.25	34.9 −3.2	40.52 +.23	14.0 −2.2	55.34 +.22	56.2 −3.1	50.59 +.64	12.8 −3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α¹ Herculis.				44 Ophiuchi.				β Draconis.				α Ophiuchi.			
	Right Ascension.		Declination North.		Right Ascension.		Declination South.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	h m 17 8		° ′ 14 31		h m 17 18		° ′ 24 3		h m 17 27		° ′ 52 23		h m 17 29		° ′ 12 38	
	s		″		s		″		s		″		s		″	
Jan. 0.9	49.36	+.20	67.4	−2.4	34.47	+.23	20.8	+0.4	31.33	+.18	36.8	−3.6	0.25	+.18	70.2	−2.3
10.9	49.58	.23	65.0	2.3	34.72	.26	21.2	0.4	31.54	.24	33.2	3.4	0.45	.22	67.9	2.2
20.9	49.83	.26	62.7	2.1	35.00	.29	21.7	0.5	31.81	.30	30.0	3.1	0.68	.25	65.8	2.1
30.8	50.10	.28	60.7	1.9	35.30	.31	22.2	0.5	32.13	.34	27.1	2.7	0.95	.27	63.8	1.8
Feb. 9.8	50.40	.30	59.0	1.6	35.62	.33	22.7	0.5	32.49	.38	24.6	2.1	1.22	.29	62.1	1.5
19.8	50.70	.30	57.6	1.2	35.96	.34	23.3	0.5	32.88	.40	22.8	1.5	1.52	.30	60.7	1.2
Mar. 1.8	51.00	.30	56.6	0.8	36.30	.34	23.8	0.5	33.29	.41	21.6	0.9	1.82	.30	59.7	0.8
11.7	51.30	.30	56.1	−0.3	36.63	.33	24.3	0.5	33.71	.41	20.9	−0.3	2.12	.30	59.1	−0.4
21.7	51.60	.29	56.0	+0.1	36.96	.33	24.7	0.4	34.12	.41	21.0	+0.4	2.41	.29	58.9	0.0
31.7	51.88	.28	56.3	0.5	37.28	.31	25.1	0.3	34.52	.39	21.7	1.0	2.70	.28	59.2	+0.5
Apr. 10.7	52.15	.26	57.0	0.9	37.59	.30	25.4	0.3	34.90	.36	23.0	1.6	2.98	.27	59.8	0.8
20.6	52.41	.24	58.1	1.2	37.88	.28	25.6	0.2	35.24	.33	24.9	2.1	3.25	.25	60.8	1.2
30.6	52.64	.22	59.5	1.5	38.15	.26	25.8	0.2	35.55	.29	27.2	2.5	3.49	.23	62.2	1.4
May 10.6	52.84	.19	61.1	1.7	38.40	.24	26.0	0.2	35.81	.24	29.8	2.8	3.71	.21	63.7	1.6
20.5	53.02	.16	62.9	1.8	38.63	.21	26.2	0.2	36.03	.18	32.8	3.0	3.91	.18	65.4	1.8
30.5	53.17	.13	64.8	1.9	38.82	.17	26.4	0.2	36.18	.13	35.9	3.1	4.08	.15	67.3	1.9
June 9.5	53.28	.10	66.7	1.9	38.97	.14	26.5	0.2	36.28	.07	39.1	3.2	4.21	.12	69.1	1.9
19.5	53.36	.06	68.6	1.8	39.10	.10	26.7	0.2	36.32	+.01	42.2	3.1	4.31	.08	71.0	1.8
29.4	53.40	+.02	70.4	1.7	39.18	.06	27.0	0.2	36.30	−.05	45.3	2.9	4.37	+.04	72.8	1.7
July 9.4	53.40	−.02	72.1	1.6	39.21	+.02	27.3	0.2	36.22	.11	48.1	2.7	4.39	.00	74.5	1.6
19.4	53.36	.05	73.6	1.4	39.21	−.03	27.4	0.2	36.09	.16	50.7	2.4	4.37	−.04	76.0	1.4
29.4	53.29	.09	74.9	1.2	39.16	.07	27.7	0.2	35.90	.21	52.9	2.1	4.32	.07	77.3	1.2
Aug. 8.3	53.19	.12	75.9	0.9	39.07	.10	27.9	0.2	35.66	.26	54.8	1.7	4.22	.11	78.4	1.0
18.3	53.05	.15	76.7	0.7	38.96	.13	28.0	0.1	35.38	.29	56.3	1.2	4.10	.14	79.2	0.7
28.3	52.90	.16	77.3	0.4	38.81	.16	28.1	+0.1	35.07	.32	57.3	0.7	3.95	.16	79.9	0.5
Sept. 7.2	52.72	.18	77.5	+0.1	38.64	.17	28.1	0.0	34.74	.34	57.7	+0.2	3.79	.17	80.2	+0.2
17.2	52.54	.18	77.5	−0.2	38.47	.17	28.1	−0.1	34.39	.35	57.8	−0.2	3.61	.18	80.3	−0.1
27.2	52.37	.17	77.1	0.5	38.29	.17	28.0	0.2	34.04	.34	57.3	0.7	3.43	.17	80.0	0.4
Oct. 7.2	52.20	.15	76.5	0.8	38.13	.15	27.8	0.2	33.70	.32	56.3	1.3	3.26	.16	79.5	0.7
17.1	52.06	.13	75.6	1.1	37.99	.12	27.5	0.2	33.39	.29	54.7	1.8	3.11	.14	78.7	0.9
27.1	51.95	.10	74.3	1.4	37.88	.09	27.3	0.2	33.11	.25	52.7	2.2	2.99	.11	77.6	1.2
Nov. 6.1	51.87	.06	72.8	1.7	37.82	−.04	27.1	0.2	32.89	.20	50.3	2.6	2.90	.07	76.3	1.5
16.1	51.83	−.01	71.0	1.9	37.80	+.01	26.9	0.2	32.71	.14	47.5	3.0	2.85	−.02	74.6	1.7
26.0	51.85	+.04	68.9	2.1	37.83	.06	26.7	−0.1	32.61	−.07	44.3	3.3	2.85	+.02	72.8	2.0
Dec. 6.0	51.91	.09	66.7	2.3	37.91	.11	26.7	0.0	32.57	.00	40.9	3.5	2.90	.07	70.7	2.1
16.0	52.02	.13	64.3	2.4	38.05	.16	26.8	+0.1	32.60	+.07	37.3	3.6	2.99	.12	68.5	2.2
25.9	52.18	.18	61.9	2.4	38.24	.21	26.9	0.2	32.70	.14	33.6	3.6	3.13	.16	66.2	2.3
35.9	52.38	+.21	59.5	−2.4	38.47	+.25	27.2	+0.3	32.88	+.20	30.0	−3.5	3.31	+.20	63.9	−2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ω Draconis.		μ Herculis.		*ψ¹ Draconis (*pr.*)		γ Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$17^h\ 37^m$	$68^\circ\ 48'$	$17^h\ 41^m$	$27^\circ\ 47'$	$17^h\ 44^m$	$72^\circ\ 12'$	$17^h\ 53^m$	$51^\circ\ 29'$
	s	″	s	″	s	″	s	″
Jan. 1.0	38.38 +.18	48.0 −3.7	27.18 +.16	41.0 −2.9	8.10 +.17	29.2 −3.7	37.06 +.14	68.5 −3.6
10.9	38.62 .29	44.4 3.5	27.36 .20	38.1 2.8	8.34 .30	25.6 3.5	37.23 .20	64.9 3.4
20.9	38.96 .39	41.1 3.2	27.58 .24	35.3 2.6	8.70 .42	22.2 3.2	37.46 .26	61.6 3.2
30.9	39.40 .48	38.1 2.8	27.84 .27	32.8 2.3	9.18 .53	19.2 2.8	37.75 .31	58.6 2.8
Feb. 9.8	39.91 .55	35.6 2.2	28.11 .29	30.6 1.9	9.76 .62	16.6 2.3	38.08 .35	56.0 2.4
19.8	40.49 .60	33.6 1.6	28.41 .30	28.9 1.5	10.42 .68	14.5 1.7	38.44 .38	53.9 1.8
Mar. 1.8	41.12 .63	32.3 1.0	28.72 .31	27.7 1.0	11.12 .73	13.1 1.1	38.83 .40	52.4 1.2
11.8	41.76 .64	31.6 −0.3	29.04 .31	27.0 −0.4	11.87 .75	12.4 −0.4	39.23 .40	51.5 −0.5
21.7	42.40 .64	31.6 +0.3	29.35 .31	26.8 +0.1	12.62 .74	12.3 +0.2	39.64 .40	51.3 +0.1
31.7	43.03 .61	32.3 1.0	29.66 .30	27.2 0.6	13.35 .71	12.9 0.9	40.04 .39	51.8 0.7
Apr. 10.7	43.62 .56	33.6 1.6	29.96 .29	28.1 1.1	14.04 .66	14.1 1.5	40.42 .37	52.8 1.3
20.7	44.16 .50	35.4 2.0	30.24 .27	29.4 1.5	14.67 .59	15.8 2.0	40.79 .35	54.4 1.9
30.6	44.63 .43	37.8 2.5	30.50 .25	31.1 1.9	15.22 .50	18.1 2.5	41.12 .31	56.6 2.3
May 10.6	45.01 .34	40.5 2.9	30.73 .22	33.2 2.2	15.68 .40	20.8 2.8	41.41 .27	59.1 2.7
20.6	45.31 .25	43.5 3.1	30.94 .19	35.5 2.4	16.02 .29	23.8 3.1	41.65 .22	61.9 3.0
30.5	45.51 .15	46.8 3.3	31.11 .15	38.0 2.5	16.26 .17	26.9 3.2	41.84 .17	65.0 3.1
June 9.5	45.61 +.05	50.1 3.3	31.24 .11	40.5 2.5	16.37 +.05	30.2 3.3	41.98 .11	68.2 3.2
19.5	45.61 −.06	53.4 3.3	31.34 .07	43.0 2.5	16.36 −.07	33.5 3.2	42.06 +.05	71.4 3.2
29.5	45.50 .16	56.6 3.1	31.39 +.03	45.5 2.4	16.23 .19	36.7 3.1	42.08 −.01	74.6 3.1
July 9.4	45.29 .25	59.6 2.9	31.40 −.01	47.8 2.2	15.98 .31	39.7 2.9	42.04 .07	77.6 2.9
19.4	44.99 .34	62.3 2.6	31.36 .05	49.9 2.0	15.61 .41	42.5 2.6	41.94 .13	80.4 2.6
29.4	44.61 .43	64.7 2.2	31.29 .09	51.8 1.7	15.15 .51	45.0 2.3	41.78 .18	82.9 2.3
Aug. 8.4	44.14 .50	66.8 1.8	31.18 .13	53.4 1.4	14.59 .60	47.1 1.9	41.58 .23	85.0 1.9
18.3	43.61 .56	68.4 1.4	31.03 .16	54.6 1.1	13.96 .67	48.7 1.4	41.33 .27	86.7 1.5
28.3	43.03 .60	69.5 0.9	30.85 .19	55.5 0.7	13.26 .72	49.9 1.0	41.03 .30	88.1 1.1
Sept. 7.3	42.41 .63	70.1 +0.4	30.65 .20	56.1 +0.3	12.51 .76	50.6 +0.5	40.72 .33	88.9 0.6
17.2	41.77 .64	70.3 −0.1	30.44 .21	56.2 0.0	11.74 .78	50.9 −0.1	40.38 .34	89.3 +0.1
27.2	41.12 .64	69.9 0.7	30.23 .21	56.0 −0.4	10.96 .77	50.5 0.6	40.03 .34	89.1 −0.4
Oct. 7.2	40.49 .61	68.9 1.2	30.03 .20	55.4 0.8	10.19 .75	49.7 1.1	39.70 .33	88.5 0.9
17.2	39.89 .57	67.5 1.7	29.84 .18	54.3 1.2	9.46 .70	48.3 1.6	39.38 .31	87.3 1.4
27.1	39.34 .51	65.5 2.2	29.67 .15	52.9 1.6	8.79 .64	46.4 2.1	39.09 .27	85.6 1.9
Nov. 6.1	38.86 .44	63.1 2.6	29.54 .11	51.1 2.0	8.19 .55	44.1 2.6	38.84 .22	83.5 2.3
16.1	38.47 .34	60.3 3.0	29.46 .06	48.9 2.3	7.68 .45	41.3 3.0	38.64 .17	80.9 2.8
26.1	38.17 .24	57.1 3.3	29.42 −.01	46.5 2.6	7.29 .33	38.2 3.3	38.50 .11	78.0 3.1
Dec. 6.0	37.98 .13	53.6 3.6	29.43 +.04	43.8 2.8	7.02 .20	34.7 3.5	38.43 −.04	74.7 3.3
16.0	37.91 −.01	49.9 3.7	29.49 .09	40.9 2.9	6.89 −.06	31.1 3.7	38.42 +.03	71.3 3.5
26.0	37.95 +.11	46.2 3.7	29.60 .14	38.0 3.0	6.90 +.08	27.4 3.7	38.49 .10	67.7 3.6
35.9	38.12 +.22	42.5 −3.6	29.76 +.18	35.0 −2.9	7.05 +.21	23.7 −3.6	38.62 +.16	64.1 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Sagittarii.		μ^1 Sagittarii.		* σ Octantis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h	° ′
	17 57	30 25	18 6	21 5	18	89 16
	s	″	s	″	m s	″
Jan. 1.0	36.37 +.20	26.2 −0.3	7.64 +.18	26.6 +0.2	9 29.51 + 7.34	42.1 −3.1
10.9	36.60 .24	26.0 0.2	7.84 .22	26.8 0.3	9 38.36 10.35	39.0 3.0
20.9	36.86 .28	25.8 −0.1	8.08 .25	27.2 0.3	9 50.07 13.07	36.1 2.7
30.9	37.15 .30	25.8 0.0	8.34 .28	27.5 0.3	10 4.37 15.45	33.6 2.3
Feb. 9.9	37.47 .32	25.7 0.0	8.63 .29	27.8 0.3	10 20.84 17.39	31.5 1.9
19.8	37.80 .34	25.8 0.0	8.93 .31	28.1 0.3	10 39.08 18.93	29.8 1.5
Mar. 1.8	38.15 .35	25.8 +0.1	9.25 .32	28.3 0.2	10 58.58 19.98	28.5 1.0
11.8	38.50 .35	25.9 0.1	9.57 .32	28.5 +0.1	11 18.93 20.60	27.8 −0.5
21.7	38.85 .35	26.0 0.1	9.90 .32	28.6 0.0	11 39.66 20.68	27.5 0.0
31.7	39.20 .34	26.1 0.1	10.22 .32	28.5 −0.1	12 0.28 20.45	27.7 +0.5
Apr. 10.7	39.54 .34	26.2 0.1	10.54 .31	28.4 0.1	12 20.48 19.81	28.4 0.9
20.7	39.87 .32	26.4 0.2	10.85 .30	28.2 0.2	12 39.80 18.73	29.5 1.4
30.6	40.19 .31	26.6 0.2	11.15 .29	28.0 0.2	12 57.82 17.26	31.1 1.7
May 10.6	40.48 .28	26.8 0.2	11.42 .27	27.7 0.3	13 14.24 15.46	33.1 2.2
20.6	40.75 .26	27.0 0.3	11.68 .24	27.5 0.2	13 28.68 13.33	35.4 2.5
30.6	40.99 .22	27.4 0.4	11.91 .22	27.2 0.2	13 40.84 10.93	38.1 2.8
June 9.5	41.20 .19	27.8 0.4	12.11 .18	27.0 0.2	13 50.49 8.26	40.9 3.0
19.5	41.37 .15	28.2 0.5	12.28 .14	26.9 −0.1	13 57.34 5.41	44.0 3.1
29.5	41.49 .10	28.7 0.5	12.40 .10	26.8 0.0	14 1.28 + 2.43	47.1 3.1
July 9.4	41.57 .05	29.3 0.6	12.48 .06	26.8 0.0	14 2.18 − 0.63	50.3 3.1
19.4	41.60 +.01	29.8 0.6	12.52 +.01	26.9 +0.1	14 0.03 3.65	53.3 3.0
29.4	41.58 −.04	30.4 0.6	12.51 −.03	27.0 0.1	13 54.92 6.52	56.2 2.8
Aug. 8.4	41.52 .08	31.0 0.5	12.46 .07	27.1 0.2	13 47.03 9.24	58.8 2.5
18.3	41.42 .12	31.5 0.5	12.37 .11	27.3 0.2	13 36.51 11.66	61.1 2.1
28.3	41.28 .15	31.9 0.4	12.25 .14	27.5 0.2	13 23.82 13.61	63.0 1.6
Sept. 7.3	41.11 .17	32.2 0.2	12.10 .16	27.6 0.1	13 9.39 15.08	64.4 1.1
17.3	40.93 .19	32.4 +0.1	11.93 .17	27.7 0.1	12 53.79 16.01	65.2 +0.5
27.2	40.74 .19	32.4 0.0	11.76 .17	27.8 +0.1	12 37.53 16.29	65.4 −0.1
Oct. 7.2	40.56 .18	32.3 −0.1	11.59 .16	27.9 0.0	12 21.37 15.90	65.0 0.7
17.2	40.39 .15	32.1 0.3	11.43 .14	27.9 0.0	12 5.90 14.88	64.0 1.2
27.1	40.25 .12	31.8 0.4	11.30 .12	27.9 0.0	11 51.79 13.19	62.5 1.8
Nov. 6.1	40.15 .08	31.4 0.4	11.20 .08	27.8 0.0	11 39.66 10.94	60.5 2.3
16.1	40.09 −.03	30.9 0.5	11.14 −.03	27.8 0.0	11 30.03 8.19	58.0 2.7
26.1	40.08 +.02	30.4 0.5	11.13 +.01	27.8 0.0	11 23.35 5.10	55.1 3.0
Dec. 6.0	40.13 .07	30.0 0.4	11.16 .06	27.9 +0.1	11 19.89 − 1.76	52.0 3.2
16.0	40.23 .13	29.5 0.4	11.25 .11	28.0 0.1	11 19.82 + 1.67	48.8 3.3
26.0	40.38 .18	29.2 0.3	11.38 .16	28.2 0.2	11 23.21 5.09	45.5 3.2
36.0	40.59 +.22	28.9 −0.2	11.56 +.20	28.4 +0.3	11 29.95 + 8.35	42.3 −3.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		α² Capricorni.		*κ Cephei.		α Pavonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 19 57	° ′ 6 55	h m 20 10	° ′ 12 56	h m 20 12	° ′ 77 19	h m 20 15	° ′ 57 8
	s	″	s	″	s	″	s	″
Jan. 1.0	53.99 +.05	10.1 −1.5	58.17 +.05	21.1 +0.4	61.60 −.45	40.0 −3.0	32.14 +.04	34.3 −2.1
11.0	54.05 .08	8.5 1.6	58.23 .08	21.5 0.3	61.24 .28	36.8 3.3	32.22 .11	32.0 2.3
21.0	54.15 .11	6.9 1.5	58.33 .12	21.8 0.3	61.05 −.09	33.5 3.4	32.36 .17	29.7 2.4
31.0	54.28 .15	5.5 1.4	58.47 .15	22.1 0.2	61.06 +.10	30.0 3.4	32.56 .24	27.3 2.4
Feb. 9.9	54.45 .18	4.2 1.2	58.64 .18	22.2 +0.1	61.25 .29	26.6 3.3	32.83 .29	25.0 2.3
19.9	54.64 .20	3.1 1.0	58.83 .21	22.2 −0.1	61.63 .46	23.5 3.0	33.15 .35	22.7 2.3
Mar. 1.9	54.85 .23	2.3 0.7	59.05 .23	22.0 0.3	62.18 .62	20.6 2.6	33.52 .39	20.4 2.1
11.9	55.09 .25	1.7 −0.3	59.29 .26	21.7 0.4	62.87 .75	18.2 2.1	33.94 .43	18.4 2.0
21.8	55.35 .27	1.6 0.0	59.56 .28	21.1 0.6	63.69 .86	16.3 1.6	34.39 .47	16.5 1.8
31.8	55.63 .28	1.7 +0.4	59.85 .29	20.4 0.8	64.59 .94	15.0 1.0	34.88 .49	14.8 1.5
Apr. 10.8	55.92 .29	2.3 0.7	60.14 .30	19.5 1.0	65.56 .98	14.3 −0.4	35.38 .51	13.4 1.3
20.7	56.22 .30	3.1 1.0	60.45 .31	18.5 1.1	66.55 .99	14.3 +0.3	35.91 .53	12.3 1.0
30.7	56.52 .30	4.3 1.3	60.77 .32	17.3 1.2	67.54 .97	14.9 0.9	36.44 .53	11.5 0.7
May 10.7	56.83 .30	5.8 1.6	61.09 .31	16.1 1.2	68.49 .92	16.1 1.5	36.97 .53	11.0 −0.3
20.7	57.12 .28	7.5 1.7	61.40 .31	14.8 1.3	69.38 .82	17.9 2.0	37.49 .51	10.8 0.0
30.6	57.39 .27	9.3 1.9	61.70 .29	13.5 1.3	70.16 .72	20.1 2.5	37.99 .48	11.0 +0.4
June 9.6	57.65 .24	11.2 2.0	61.98 .27	12.3 1.2	70.82 .60	22.8 2.8	38.46 .45	11.5 0.7
19.6	57.88 .21	13.2 2.0	62.24 .24	11.2 1.1	71.35 .45	25.8 3.1	38.89 .39	12.4 1.0
29.6	58.08 .18	15.2 1.9	62.47 .21	10.1 0.9	71.73 .29	29.1 3.4	39.26 .34	13.6 1.3
July 9.5	58.24 .14	17.1 1.8	62.66 .17	9.3 0.8	71.94 +.13	32.6 3.5	39.57 .27	15.1 1.6
19.5	58.36 .10	18.9 1.7	62.81 .12	8.5 0.6	71.99 −.04	36.1 3.5	39.81 .20	16.8 1.8
29.5	58.44 .05	20.6 1.6	62.91 .08	8.0 0.5	71.87 .20	39.6 3.5	39.97 .13	18.7 2.0
Aug. 8.4	58.47 +.01	22.0 1.4	62.97 +.03	7.6 0.3	71.59 .36	43.1 3.4	40.06 +.05	20.7 2.0
18.4	58.45 −.03	23.3 1.2	62.98 −.01	7.4 −0.2	71.14 .52	46.4 3.2	40.07 −.03	22.8 2.0
28.4	58.40 .07	24.3 0.9	62.95 .07	7.3 0.0	70.56 .66	49.5 2.9	39.99 .11	24.8 2.0
Sept. 7.4	58.31 .10	25.1 0.7	62.87 .09	7.3 +0.1	69.83 .78	52.3 2.6	39.85 .17	26.7 1.8
17.3	58.19 .13	25.7 0.5	62.77 .12	7.5 0.2	68.99 .89	54.7 2.2	39.65 .23	28.4 1.6
27.3	58.05 .15	26.1 +0.2	62.64 .14	7.7 0.3	68.06 .97	56.8 1.8	39.40 .27	29.9 1.3
Oct. 7.3	57.89 .16	26.2 0.0	62.49 .15	8.0 0.3	67.05 1.03	58.4 1.3	39.11 .30	31.0 0.9
17.3	57.73 .16	26.1 −0.2	62.33 .15	8.4 0.4	65.99 1.07	59.4 0.8	38.80 .31	31.7 0.5
27.2	57.57 .15	25.8 0.5	62.18 .15	8.8 0.4	64.91 1.08	60.0 +0.3	38.49 .30	32.0 +0.1
Nov. 6.2	57.42 .14	25.2 0.7	62.04 .13	9.2 0.4	63.83 1.06	60.0 −0.3	38.20 .28	31.9 −0.3
16.2	57.30 .11	24.4 0.9	61.92 .11	9.6 0.4	62.79 1.01	59.4 0.9	37.93 .24	31.4 0.7
26.1	57.20 .08	23.5 1.1	61.82 .08	10.0 0.4	61.81 .94	58.2 1.4	37.71 .19	30.5 1.1
Dec. 6.1	57.13 .05	22.3 1.2	61.76 .05	10.4 0.4	60.91 .83	56.5 1.9	37.55 .14	29.2 1.5
16.1	57.10 −.01	21.0 1.4	61.73 −.01	10.9 0.4	60.14 .71	54.3 2.4	37.44 −.07	27.5 1.8
26.1	57.11 +.02	19.5 1.5	61.73 +.03	11.3 0.4	59.50 .56	51.7 2.8	37.40 .00	25.6 2.0
36.0	57.15 +.06	18.0 −1.5	61.78 +.06	11.6 +0.4	59.03 −.39	48.7 −3.1	37.44 +.07	23.4 −2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Sagittarii.		*50 Draconis.		ζ Aquilæ.		d Sagittarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 18 47	° ′ 26 27	h m 18 50	° ′ 75 16	h m 18 59	° ′ 13 40	h m 19 10	° ′ 19 10
	s	″	s	″	s	″	s	″
Jan. 1.0	20.84 +.15	12.7 −0.2	22.39 −.08	52.8 −3.6	32.10 +.09	29.5 −2.1	9.78 +.11	40.6 +0.1
11.0	21.01 .18	12.5 0.2	22.39 +.08	49.2 3.6	32.21 .13	27.4 2.1	9.91 .15	40.8 0.1
20.9	21.21 .22	12.3 0.2	22.56 .25	45.7 3.5	32.36 .17	25.3 2.0	10.08 .19	40.9 0.1
30.9	21.45 .25	12.1 0.2	22.88 .40	42.3 3.2	32.55 .20	23.3 1.8	10.29 .22	41.0 +0.1
Feb. 9.9	21.72 .28	11.9 0.2	23.36 .54	39.3 2.9	32.76 .22	21.6 1.6	10.52 .24	41.0 0.0
19.9	22.01 .30	11.6 0.2	23.96 .66	36.6 2.4	33.00 .25	20.2 1.3	10.78 .27	41.0 −0.1
Mar. 1.8	22.31 .32	11.4 0.3	24.68 .75	34.5 1.8	33.25 .27	19.0 0.9	11.05 .29	40.9 0.2
11.8	22.64 .33	11.1 0.3	25.47 .82	32.9 1.2	33.53 .28	18.3 0.5	11.35 .30	40.6 0.3
21.8	22.97 .33	10.8 0.3	26.32 .86	32.0 −0.6	33.82 .29	18.0 −0.1	11.65 .31	40.2 0.4
31.8	23.31 .34	10.4 0.4	27.20 .87	31.7 +0.1	34.11 .30	18.1 +0.3	11.97 .32	39.7 0.5
Apr. 10.7	23.64 .34	10.1 0.4	28.07 .85	32.1 0.7	34.41 .30	18.7 0.7	12.29 .32	39.2 0.6
20.7	23.98 .33	9.6 0.4	28.90 .81	33.1 1.3	34.71 .29	19.6 1.1	12.61 .32	38.5 0.7
30.7	24.31 .32	9.3 0.4	29.68 .73	34.7 1.9	35.00 .28	20.9 1.4	12.93 .31	37.8 0.7
May 10.6	24.63 .31	8.9 0.3	30.37 .64	36.9 2.4	35.28 .27	22.5 1.7	13.24 .30	37.0 0.7
20.6	24.92 .29	8.6 0.2	30.96 .53	39.5 2.7	35.54 .25	24.3 1.9	13.54 .29	36.3 0.7
30.6	25.20 .26	8.4 0.1	31.43 .40	42.3 3.0	35.78 .23	26.3 2.1	13.82 .26	35.6 0.7
June 9.6	25.25 .23	8.3 −0.1	31.77 .26	45.5 3.2	35.99 .20	28.4 2.1	14.07 .23	35.0 0.6
19.5	25.66 .19	8.3 0.0	31.96 +.12	48.8 3.4	36.17 .16	30.6 2.1	14.29 .20	34.5 0.5
29.5	25.83 .15	8.4 +0.2	32.01 −.03	52.2 3.4	36.31 .12	32.7 2.1	14.47 .16	34.0 0.4
July 9.5	25.95 .10	8.6 0.3	31.91 .17	55.6 3.3	36.41 .08	34.7 2.0	14.61 .12	33.7 0.2
19.5	26.03 .05	8.9 0.3	31.66 .32	58.9 3.2	36.47 +.04	36.7 1.9	14.70 .07	33.5 −0.1
29.4	26.06 +.01	9.3 0.4	31.28 .45	62.0 3.0	36.49 −.01	38.4 1.7	14.75 +.03	33.5 0.0
Aug. 8.4	26.05 −.04	9.8 0.4	30.76 .58	64.8 2.7	36.46 .05	40.0 1.5	14.76 −.02	33.6 +0.1
18.4	25.98 .08	10.2 0.5	30.12 .69	67.3 2.3	36.39 .09	41.4 1.2	14.72 .06	33.7 0.2
28.3	25.88 .12	10.7 0.4	29.38 .78	69.4 1.9	36.29 .12	42.5 1.0	14.64 .10	33.9 0.2
Sept. 7.3	25.75 .15	11.1 0.4	28.56 .86	71.2 1.5	36.15 .15	43.3 0.7	14.52 .13	34.1 0.3
17.3	25.59 .17	11.5 0.3	27.67 .91	72.4 1.0	35.99 .17	43.8 0.4	14.38 .15	34.4 0.3
27.3	25.41 .18	11.8 0.2	26.73 .95	73.2 +0.5	35.82 .18	44.1 +0.1	14.22 .16	34.7 0.3
Oct. 7.2	25.23 .18	12.0 0.1	25.78 .95	73.4 0.0	35.64 .18	44.1 −0.2	14.05 .17	35.0 0.3
17.2	25.06 .16	12.1 +0.1	24.83 .94	73.2 −0.5	35.46 .17	43.7 0.5	13.88 .16	35.2 0.2
27.2	24.90 .14	12.1 0.0	23.90 .90	72.3 1.1	35.30 .15	43.1 0.8	13.73 .14	35.4 0.2
Nov. 6.2	24.77 .11	12.0 −0.1	23.03 .83	71.0 1.6	35.16 .13	42.2 1.1	13.59 .12	35.6 0.2
16.1	24.68 .07	11.8 0.2	22.24 .74	69.1 2.1	35.05 .09	41.0 1.3	13.50 .08	35.7 0.1
26.1	24.63 −.03	11.6 0.2	21.56 .62	66.7 2.6	34.97 .06	39.5 1.6	13.43 −.04	35.9 0.1
Dec. 6.1	24.63 +.02	11.3 0.3	21.00 .49	64.0 3.0	34.94 −.02	37.8 1.8	13.41 .00	36.0 0.1
16.0	24.67 .07	11.1 0.3	20.57 .34	60.8 3.3	34.74 +.03	36.0 1.9	13.43 +.04	36.1 0.1
26.0	24.77 .12	10.8 0.3	20.31 .19	57.5 3.5	34.99 .07	33.9 2.1	13.50 .09	36.3 0.1
36.0	24.91 +.16	10.6 −0.2	20.20 −.02	53.9 −3.6	35.08 +.11	31.8 −2.1	13.61 +.13	36.4 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*δ Draconis.		*τ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 19 12	° ′ 67 25	h m 19 17	° ′ 73 6	h m 19 19	° ′ 2 51	h m 19 30	° ′ 7 18
	s	″	s	″	s	″	s	″
Jan. 1.0	27.49 −.06	73.1 −3.5	54.32 −.14	64.7 −3.5	3.43 +.06	42.1 −1.4	1.22 +.08	34.5 +0.8
11.0	27.48 +.04	69.5 3.6	54.25 .00	61.2 3.5	3.54 .12	40.6 1.4	1.32 .12	35.4 0.8
21.0	27.58 .15	66.0 3.5	54.33 +.14	57.6 3.5	3.68 .16	39.2 1.4	1.46 .15	36.2 0.8
30.9	27.78 .25	62.5 3.3	54.53 .28	54.2 3.3	3.85 .19	37.9 1.2	1.63 .18	36.9 0.7
Feb. 9.9	28.08 .34	59.3 3.0	54.87 .41	51.0 3.0	4.05 .21	36.7 1.1	1.83 .21	37.5 0.5
19.9	28.47 .43	56.5 2.6	55.34 .52	48.1 2.6	4.27 .24	35.7 0.8	2.05 .24	37.9 0.4
Mar. 1.9	28.94 .49	54.2 2.0	55.91 .61	45.7 2.1	4.52 .26	35.0 0.5	2.30 .26	38.2 +0.1
11.8	29.46 .55	52.4 1.5	56.57 .68	43.9 1.5	4.79 .27	34.6 −0.2	2.56 .27	38.2 −0.1
21.8	30.03 .58	51.3 0.8	57.29 .74	42.6 0.9	5.07 .29	34.5 +0.1	2.85 .29	38.0 0.3
31.8	30.63 .60	50.8 −0.2	58.05 .77	42.0 −0.3	5.36 .29	34.7 0.4	3.14 .30	37.6 0.5
Apr. 10.8	31.23 .60	51.0 +0.5	58.82 .77	42.1 +0.4	5.66 .30	35.3 0.7	3.44 .30	37.0 0.7
20.7	31.83 .58	51.8 1.1	59.59 .74	42.8 1.0	5.95 .30	36.2 1.0	3.75 .31	36.1 0.9
30.7	32.39 .55	53.2 1.7	60.31 .70	44.1 1.6	6.25 .29	37.3 1.2	4.05 .30	35.1 1.1
May 10.7	32.92 .49	55.2 2.2	60.98 .63	46.0 2.1	6.54 .28	38.7 1.4	4.35 .29	33.9 1.2
20.6	33.38 .43	57.6 2.6	61.57 .54	48.3 2.6	6.82 .27	40.2 1.6	4.64 .28	32.7 1.3
30.6	33.78 .36	60.4 3.0	62.06 .44	51.1 2.9	7.08 .25	41.8 1.7	4.92 .26	31.4 1.3
June 9.6	34.09 .27	63.6 3.2	62.45 .33	54.2 3.2	7.31 .22	43.5 1.7	5.16 .23	30.1 1.3
19.6	34.32 .18	66.9 3.4	62.72 .21	57.5 3.4	7.51 .18	45.3 1.7	5.38 .20	28.8 1.2
29.5	34.45 +.06	70.4 3.5	62.87 +.08	60.9 3.4	7.68 .15	46.9 1.6	5.57 .17	27.7 1.1
July 9.5	34.48 −.02	73.8 3.4	62.88 −.05	64.4 3.4	7.81 .11	48.5 1.5	5.72 .13	26.6 1.0
19.5	34.41 .12	77.3 3.3	62.76 .18	67.8 3.4	7.90 .07	50.0 1.4	5.82 .08	25.7 0.8
29.5	34.24 .21	80.5 3.2	62.52 .30	71.1 3.2	7.94 +.02	51.3 1.2	5.88 +.04	24.9 0.7
Aug. 8.4	33.98 .30	83.6 2.9	62.16 .42	74.2 3.0	7.94 −.02	52.4 1.0	5.90 .00	24.3 0.5
18.4	33.63 .37	86.3 2.6	61.68 .52	77.0 2.7	7.90 .06	53.4 0.8	5.87 −.05	23.9 0.4
28.4	33.21 .45	88.7 2.2	61.11 .62	79.5 2.3	7.82 .09	54.1 0.6	5.81 .08	23.5 0.2
Sept. 7.3	32.72 .51	90.7 1.8	60.45 .70	81.6 1.9	7.71 .13	54.7 0.4	5.71 .12	23.4 −0.1
17.3	32.18 .56	92.3 1.3	59.72 .76	83.3 1.4	7.57 .15	55.0 +0.2	5.58 .14	23.3 0.0
27.3	31.61 .59	93.4 0.8	58.93 .80	84.5 1.0	7.41 .16	55.2 0.0	5.43 .15	23.4 +0.1
Oct. 7.3	31.01 .60	93.9 +0.3	58.12 .82	85.1 +0.5	7.25 .16	55.1 −0.2	5.27 .16	23.5 0.2
17.2	30.40 .60	93.9 −0.3	57.30 .82	85.3 −0.1	7.09 .16	54.8 0.3	5.11 .16	23.8 0.3
27.2	29.82 .57	93.4 0.8	56.49 .79	84.9 0.7	6.93 .14	54.4 0.5	4.96 .14	24.2 0.4
Nov. 6.2	29.26 .54	92.3 1.3	55.71 .75	83.9 1.2	6.80 .12	53.7 0.7	4.82 .12	24.6 0.5
16.2	28.75 .48	90.7 1.9	55.00 .68	82.4 1.7	6.69 .09	52.9 0.9	4.72 .09	25.2 0.6
26.1	28.30 .40	88.6 2.4	54.35 .59	80.4 2.2	6.62 .06	51.9 1.1	4.64 .06	25.8 0.6
Dec. 6.1	27.93 .32	86.0 2.8	53.81 .49	78.0 2.7	6.58 −.02	50.8 1.2	4.60 −.02	26.4 0.7
16.1	27.65 .23	83.0 3.1	53.38 .37	75.1 3.0	6.58 +.02	49.5 1.3	4.60 +.02	27.2 0.8
26.0	27.47 .13	79.7 3.4	53.08 .23	71.9 3.3	6.62 .06	48.1 1.4	4.64 .06	28.0 0.8
36.0	27.39 −.02	76.3 −3.5	52.92 −.09	68.5 −3.5	6.71 +.10	46.7 −1.4	4.72 +.10	28.8 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (*Altair.*)		*ε Draconis.		β Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 19 40	° ′ 10 18	h m 19 44	° ′ 8 31	h m 19 48	° ′ 69 56	h m 19 49	° ′ 6 5
	s	″	s	″	s	″	s	″
Jan. 1.0	11.12 +.06	13.3 −1.8	33.01 +.05	58.2 −1.6	31.36 −.18	37.5 −3.3	2.30 +.05	21.9 −1.5
11.0	11.20 .09	11.5 1.8	33.08 .09	56.5 1.7	31.24 −.07	34.1 3.4	2.37 .09	20.4 1.5
21.0	11.31 .13	9.8 1.7	33.20 .13	54.8 1.6	31.23 +.05	30.6 3.5	2.48 .12	18.8 1.5
31.0	11.46 .16	8.1 1.6	33.34 .16	53.2 1.5	31.35 .17	27.1 3.4	2.62 .16	17.4 1.4
Feb. 9.9	11.64 .19	6.6 1.4	33.52 .19	51.8 1.3	31.57 .28	23.8 3.2	2.79 .18	10.1 1.2
19.9	11.84 .22	5.3 1.1	33.72 .21	50.6 1.0	31.91 .39	20.7 2.8	2.99 .21	15.0 0.9
Mar. 1.9	12.07 .24	4.3 0.8	33.95 .24	49.7 0.7	32.34 .48	18.1 2.4	3.21 .23	14.2 0.7
11.9	12.32 .26	3.6 0.5	34.20 .26	49.2 −0.4	32.86 .55	15.9 1.9	3.46 .26	13.7 −0.3
21.8	12.59 .28	3.4 −0.1	34.46 .28	49.0 0.0	33.45 .61	14.4 1.2	3.72 .27	13.5 0.0
31.8	12.88 .29	3.5 +0.3	34.75 .29	49.1 +0.3	34.08 .65	13.4 −0.6	4.01 .29	13.7 +0.4
Apr. 10.8	13.17 .30	4.0 0.7	35.04 .30	49.6 0.7	34.74 .66	13.1 0.0	4.30 .30	14.2 0.7
20.7	13.47 .30	4.8 1.0	35.34 .30	50.5 1.0	35.41 .66	13.5 +0.7	4.60 .30	15.1 1.0
30.7	13.77 .30	6.1 1.4	35.64 .30	51.7 1.4	36.06 .64	14.5 1.3	4.90 .30	16.3 1.3
May 10.7	14.07 .29	7.6 1.6	35.94 .29	53.2 1.6	36.68 .59	16.1 1.8	5.20 .29	17.7 1.5
20.7	14.35 .28	9.3 1.8	36.23 .28	54.9 1.8	37.25 .54	18.1 2.3	5.49 .28	19.4 1.7
30.6	14.62 .26	11.2 2.0	36.50 .26	56.8 1.9	37.75 .46	20.7 2.7	5.76 .26	21.1 1.8
June 9.6	14.87 .23	13.3 2.1	36.75 .24	58.8 2.0	38.16 .37	23.6 3.1	6.01 .24	23.0 1.9
19.6	15.08 .20	15.4 2.1	36.97 .20	60.8 2.0	38.49 .27	26.9 3.3	6.24 .21	24.9 1.9
29.6	15.26 .16	17.4 2.0	37.16 .17	62.9 2.0	38.71 .17	30.3 3.5	6.43 .17	26.8 1.9
July 9.5	15.40 .12	19.5 2.0	37.31 .13	64.8 1.9	38.83 +.06	33.8 3.5	6.58 .13	28.7 1.8
19.5	15.50 .08	21.4 1.8	37.41 .08	66.7 1.8	38.83 −.05	37.3 3.5	6.69 .09	30.4 1.6
29.5	15.56 +.03	23.1 1.7	37.48 +.04	68.4 1.6	38.73 .16	40.8 3.4	6.76 +.05	31.9 1.5
Aug. 8.4	15.57 −.01	24.7 1.5	37.49 .00	69.9 1.4	38.52 .26	44.1 3.2	6.78 .00	33.3 1.3
18.4	15.54 .05	26.1 1.2	37.47 −.04	71.2 1.2	38.20 .36	47.2 3.0	6.76 −.04	34.5 1.1
28.4	15.47 .09	27.2 1.1	37.41 .08	72.3 1.0	37.80 .45	50.0 2.7	6.70 .08	35.5 0.9
Sept. 7.4	15.36 .12	28.1 0.8	37.30 .11	73.1 0.7	37.31 .52	52.5 2.3	6.61 .11	36.2 0.6
17.3	15.23 .14	28.7 0.5	37.18 .14	73.7 0.5	36.76 .58	54.6 1.8	6.48 .14	36.7 0.4
27.3	15.07 .16	29.1 +0.3	37.03 .16	74.1 +0.2	36.14 .63	56.2 1.4	6.34 .15	37.0 +0.2
Oct. 7.3	14.91 .17	29.3 0.0	36.86 .16	74.2 0.0	35.49 .66	57.4 0.9	6.18 .16	37.1 0.0
17.3	14.74 .17	29.1 −0.3	36.70 .16	74.1 −0.2	34.83 .67	58.0 +0.3	6.01 .16	36.9 −0.3
27.2	14.57 .16	28.7 0.5	36.54 .15	73.7 0.5	34.16 .68	58.0 −0.2	5.86 .15	36.5 0.5
Nov. 6.2	14.43 .14	28.1 0.8	36.39 .13	73.1 0.7	33.50 .63	57.5 0.8	5.71 .13	35.9 0.7
16.2	14.30 .11	27.1 1.0	36.27 .11	72.3 1.0	32.89 .59	56.5 1.3	5.59 .11	35.1 0.9
26.1	14.21 .08	26.0 1.3	36.18 .08	71.2 1.2	32.32 .53	54.9 1.9	5.50 .08	34.1 1.1
Dec. 6.1	14.15 −.04	24.6 1.4	36.12 −.04	69.9 1.3	31.83 .45	52.7 2.4	5.44 .04	32.9 1.3
16.1	14.13 .00	23.1 1.6	36.09 .00	68.5 1.5	31.43 .35	50.1 2.8	5.41 −.01	31.6 1.4
26.1	14.14 +.03	21.4 1.7	36.11 +.03	66.9 1.6	31.12 .25	47.2 3.1	5.42 +.03	30.1 1.5
36.0	14.20 +.07	19.7 −1.8	36.16 +.07	65.3 −1.7	30.93 −.14	43.9 −3.4	5.47 +.07	28.6 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		α² Capricorni.		*κ Cephei.		α Pavonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$19^{h}\ 57^{m}$	$6^{\circ}\ 55'$	$20^{h}\ 10^{m}$	$12^{\circ}\ 56'$	$20^{h}\ 12^{m}$	$77^{\circ}\ 19'$	$20^{h}\ 15^{m}$	$57^{\circ}\ 8'$
	s	″	s	″	s	″	s	″
Jan. 1.0	53.99 +.05	10.1 −1.5	58.17 +.05	21.1 +0.4	61.60 −.45	40.0 −3.0	32.14 +.04	34.3 −2.1
11.0	54.05 .08	8.5 1.6	58.23 .08	21.5 0.3	61.24 .28	36.8 3.3	32.22 .11	32.0 2.3
21.0	54.15 .11	6.9 1.5	58.33 .12	21.8 0.3	61.05 −.09	33.5 3.4	32.36 .17	29.7 2.4
31.0	54.28 .15	5.5 1.4	58.47 .15	22.1 0.2	61.06 +.10	30.0 3.4	32.56 .24	27.3 2.4
Feb. 9.9	54.45 .18	4.2 1.2	58.64 .18	22.2 +0.1	61.25 .29	26.6 3.3	32.83 .29	25.0 2.3
19.9	54.64 .20	3.1 1.0	58.83 .21	22.2 −0.1	61.63 .46	23.5 3.0	33.15 .35	22.7 2.3
Mar. 1.9	54.85 .23	2.3 0.7	59.05 .23	22.0 0.3	62.18 .62	20.6 2.6	33.52 .39	20.4 2.1
11.9	55.09 .25	1.7 −0.3	59.29 .26	21.7 0.4	62.87 .75	18.2 2.1	33.94 .43	18.4 2.0
21.8	55.35 .27	1.6 0.0	59.56 .28	21.1 0.6	63.69 .86	16.3 1.6	34.39 .47	16.5 1.8
31.8	55.63 .28	1.7 +0.4	59.85 .29	20.4 0.8	64.59 .94	15.0 1.0	34.88 .49	14.8 1.5
Apr. 10.8	55.92 .29	2.3 0.7	60.14 .30	19.5 1.0	65.56 .98	14.3 −0.4	35.38 .51	13.4 1.3
20.7	56.22 .30	3.1 1.0	60.45 .31	18.5 1.1	66.55 .99	14.3 +0.3	35.91 .53	12.3 1.0
30.7	56.52 .30	4.3 1.3	60.77 .32	17.3 1.2	67.54 .97	14.9 0.9	36.44 .53	11.5 0.7
May 10.7	56.83 .30	5.8 1.6	61.09 .31	16.1 1.2	68.49 .92	16.1 1.5	36.97 .53	11.0 −0.3
20.7	57.12 .28	7.5 1.7	61.40 .31	14.8 1.3	69.38 .82	17.9 2.0	37.49 .51	10.8 0.0
30.6	57.39 .27	9.3 1.9	61.70 .29	13.5 1.3	70.16 .72	20.1 2.5	37.99 .48	11.0 +0.4
June 9.6	57.65 .24	11.2 2.0	61.98 .27	12.3 1.2	70.82 .60	22.8 2.8	38.46 .45	11.5 0.7
19.6	57.88 .21	13.2 2.0	62.24 .24	11.2 1.1	71.35 .45	25.8 3.1	38.89 .39	12.4 1.0
29.6	58.08 .18	15.2 1.9	62.47 .21	10.1 0.9	71.73 .29	29.1 3.4	39.26 .34	13.6 1.3
July 9.5	58.24 .14	17.1 1.8	62.66 .17	9.3 0.8	71.94 +.13	32.6 3.5	39.57 .27	15.1 1.6
19.5	58.36 .10	18.9 1.7	62.81 .12	8.5 0.6	71.99 −.04	36.1 3.5	39.81 .20	16.8 1.6
29.5	58.44 .05	20.6 1.6	62.91 .08	8.0 0.5	71.87 .20	39.6 3.5	39.97 .13	18.7 2.0
Aug. 8.4	58.47 +.01	22.0 1.4	62.97 +.03	7.6 0.3	71.59 .36	43.1 3.4	40.06 +.05	20.7 2.0
18.4	58.45 −.03	23.3 1.2	62.98 −.01	7.4 −0.2	71.14 .52	46.4 3.2	40.07 −.03	22.8 2.0
28.4	58.40 .07	24.3 0.9	62.95 .07	7.3 0.0	70.56 .66	49.5 2.9	39.99 .11	24.8 2.0
Sept. 7.4	58.31 .10	25.1 0.7	62.87 .09	7.3 +0.1	69.83 .78	52.3 2.6	39.85 .17	26.7 1.8
17.3	58.19 .13	25.7 0.5	62.77 .12	7.5 0.2	68.99 .89	54.7 2.2	39.65 .23	28.4 1.6
27.3	58.05 .15	26.1 +0.2	62.64 .14	7.7 0.3	68.06 .97	56.8 1.8	39.40 .27	29.9 1.3
Oct. 7.3	57.89 .16	26.2 0.0	62.49 .15	8.0 0.3	67.05 1.03	58.4 1.3	39.11 .30	31.0 0.9
17.3	57.73 .16	26.1 −0.2	62.33 .15	8.4 0.4	65.99 1.07	59.4 0.8	38.80 .31	31.7 0.5
27.2	57.57 .15	25.8 0.5	62.18 .15	8.8 0.4	64.91 1.08	60.0 +0.3	38.49 .30	32.0 +0.1
Nov. 6.2	57.42 .14	25.2 0.7	62.04 .13	9.2 0.4	63.83 1.06	60.0 −0.3	38.20 .28	31.9 −0.3
16.2	57.30 .11	24.4 0.9	61.92 .11	9.6 0.4	62.79 1.01	59.4 0.9	37.93 .24	31.4 0.7
26.1	57.20 .08	23.5 1.1	61.82 .08	10.0 0.4	61.81 .94	58.2 1.4	37.71 .19	30.5 1.1
Dec. 6.1	57.13 .05	22.3 1.2	61.76 .05	10.4 0.4	60.91 .83	56.5 1.9	37.55 .14	29.2 1.5
16.1	57.10 −.01	21.0 1.4	61.73 −.01	10.9 0.4	60.14 .71	54.3 2.4	37.44 −.07	27.5 1.8
26.1	57.11 +.02	19.5 1.5	61.73 +.03	11.3 0.4	59.50 .56	51.7 2.8	37.40 .00	25.6 2.0
36.0	57.15 +.06	18.0 −1.5	61.78 +.06	11.6 +0.4	59.03 −.39	48.7 −3.1	37.44 +.07	23.4 −2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Capricorni.		ε Delphini.		*Groombridge 3241.		α Cygni.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 20 20	° ′ 18 37	h m 20 27	° ′ 10 52	h m 20 30	° ′ 72 5	h m 20 37	° ′ 44 49
	s	″	s	″	s	″	s	″
Jan. 1.1	0.75 +.04	44.1 0.0	6.60 +.01	17.1 −1.6	27.93 −.33	66.6 −3.0	3.72 −.07	37.9 −2.7
11.0	0.81 .08	44.1 0.0	6.63 .05	15.5 1.7	27.65 .21	63.5 3.2	3.67 −.02	35.0 2.9
21.0	0.91 .11	44.1 −0.1	6.70 .08	13.8 1.6	27.50 −.08	60.1 3.4	3.68 +.03	32.0 3.0
31.0	1.04 .15	43.9 0.2	6.80 .12	12.2 1.5	27.48 +.05	56.7 3.4	3.73 .08	29.0 3.0
Feb. 10.0	1.20 .18	43.7 0.3	6.93 .15	10.8 1.4	27.60 .18	53.3 3.3	3.84 .13	26.1 2.8
19.9	1.40 .21	43.3 0.4	7.09 .18	9.5 1.1	27.84 .30	50.1 3.1	3.99 .18	23.3 2.6
Mar. 1.9	1.62 .23	42.8 0.6	7.29 .20	8.5 0.8	28.21 .42	47.2 2.7	4.19 .22	20.9 2.2
11.9	1.86 .26	42.1 0.7	7.50 .23	7.8 0.5	28.68 .52	44.7 2.3	4.44 .27	18.9 1.8
21.9	2.13 .28	41.3 0.9	7.75 .25	7.5 −0.1	29.25 .61	42.6 1.7	4.72 .30	17.4 1.3
31.8	2.42 .30	40.4 1.0	8.01 .27	7.6 +0.2	29.90 .67	41.2 1.1	5.04 .33	16.4 0.7
Apr. 10.8	2.72 .31	39.4 1.1	8.29 .29	8.0 0.5	30.59 .71	40.4 −0.5	5.39 .35	16.0 −0.1
20.8	3.04 .32	38.3 1.1	8.59 .30	8.8 1.0	31.32 .73	40.2 +0.1	5.75 .37	16.2 +0.5
30.7	3.37 .33	37.1 1.2	8.90 .30	10.0 1.3	32.05 .73	40.6 0.8	6.12 .37	17.0 1.0
May 10.7	3.69 .33	35.9 1.2	9.20 .30	11.5 1.6	32.77 .70	41.7 1.4	6.50 .37	18.3 1.6
20.7	4.02 .32	34.7 1.2	9.50 .30	13.2 1.8	33.46 .65	43.3 1.9	6.86 .36	20.1 2.1
30.7	4.33 .30	33.6 1.1	9.80 .28	15.1 2.0	34.08 .59	45.5 2.4	7.21 .33	22.4 2.5
June 9.6	4.63 .28	32.5 1.0	10.07 .26	17.2 2.1	34.63 .50	48.1 2.8	7.52 .30	25.0 2.8
19.6	4.90 .26	31.6 0.8	10.32 .24	19.4 2.2	35.09 .41	51.1 3.1	7.81 .26	28.0 3.0
29.6	5.14 .22	30.8 0.7	10.54 .20	21.6 2.2	35.44 .30	54.4 3.4	8.05 .22	31.1 3.2
July 9.6	5.34 .18	30.2 0.5	10.72 .16	23.8 2.1	35.68 .18	57.8 3.5	8.24 .16	34.4 3.3
19.5	5.51 .14	29.8 0.3	10.87 .12	25.8 2.0	35.81 +.06	61.4 3.6	8.38 .11	37.7 3.3
29.5	5.62 .09	29.5 −0.2	10.97 .08	27.8 1.8	35.81 −.06	65.0 3.6	8.46 +.05	41.0 3.2
Aug. 8.5	5.69 +.04	29.4 0.0	11.02 +.03	29.5 1.7	35.69 .18	68.6 3.5	8.49 .00	44.2 3.1
18.4	5.71 .00	29.5 +0.1	11.03 −.01	31.1 1.5	35.45 .29	72.0 3.3	8.45 −.06	47.2 2.9
28.4	5.69 −.04	29.7 0.3	11.00 .05	32.4 1.2	35.11 .40	75.2 3.1	8.37 .11	50.0 2.6
Sept. 7.4	5.63 .08	30.1 0.4	10.93 .09	33.5 1.0	34.66 .49	78.2 2.8	8.23 .16	52.5 2.3
17.4	5.53 .11	30.5 0.4	10.82 .12	34.4 0.7	34.13 .57	80.8 2.4	8.05 .20	54.7 2.0
27.3	5.40 .14	30.9 0.5	10.70 .14	35.0 0.5	33.51 .64	83.0 2.0	7.84 .23	56.4 1.6
Oct. 7.3	5.25 .15	31.4 0.5	10.55 .15	35.3 +0.2	32.84 .69	84.8 1.5	7.60 .25	57.8 1.1
17.3	5.09 .16	31.8 0.4	10.39 .16	35.4 −0.1	32.13 .72	86.1 1.0	7.34 .26	58.7 0.6
27.3	4.94 .15	32.3 0.4	10.23 .16	35.2 0.3	31.40 .74	86.8 +0.5	7.08 .26	59.1 +0.1
Nov. 6.2	4.79 .14	32.6 0.4	10.07 .14	34.7 0.6	30.66 .73	87.0 −0.1	6.82 .25	59.0 −0.3
16.2	4.66 .11	33.0 0.3	9.94 .13	34.0 0.8	29.94 .70	86.7 0.7	6.57 .24	58.4 0.8
26.2	4.56 .09	33.3 0.2	9.82 .10	33.1 1.0	29.26 .65	85.7 1.2	6.34 .21	57.3 1.3
Dec. 6.1	4.49 .05	33.5 0.2	9.73 .07	31.9 1.3	28.64 .59	84.2 1.6	6.15 .18	55.7 1.8
16.1	4.45 −.02	33.6 0.1	9.68 .04	30.6 1.4	28.09 .50	82.1 2.3	5.98 .14	53.7 2.2
26.1	4.45 +.02	33.7 +0.1	9.66 −.01	29.1 1.5	27.63 .40	79.6 2.7	5.86 .10	51.3 2.5
36.1	4.49 +.06	33.7 0.0	9.67 +.03	27.5 −1.6	27.29 −.29	76.7 −3.1	5.79 −.05	48.6 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Aquarii.		ν Cygni.		*12 Year Cat. 1879.		61 Cygni (*pr.*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 20 45	° ′ 9 27	h m 20 52	° ′ 40 40	h m 20 53	° ′ 80 4	h m 21 1	° ′ 38 7
	s	″	s	″	s	″	s	″
Jan. 1.1	46.02 +.02	38.6 +0.5	24.01 −.07	45.5 −2.6	9.60 −.79	31.9 −2.6	10.13 −.06	33.3 −2.3
11.1	46.06 .05	39.1 0.5	23.96 −.03	42.9 2.7	8.90 .58	29.1 3.0	10.09 −.02	30.9 2.5
21.0	46.12 .08	39.6 0.4	23.96 +.02	40.1 2.8	8.43 .36	25.9 3.2	10.09 +.02	28.3 2.6
31.0	46.22 .11	39.9 0.3	24.00 .06	37.2 2.8	8.19 −.12	22.6 3.3	10.13 .07	25.7 2.6
Feb. 10.0	46.34 .14	40.1 +0.1	24.09 .11	34.5 2.7	8.19 +.12	19.2 3.4	10.22 .11	23.1 2.5
20.0	46.50 .17	40.2 0.0	24.22 .15	31.8 2.5	8.44 .36	16.0 3.2	10.35 .15	20.6 2.3
Mar. 1.9	46.69 .20	40.1 −0.2	24.40 .20	29.5 2.1	8.91 .59	12.9 2.9	10.53 .20	18.5 2.0
11.9	46.90 .23	39.8 0.4	24.62 .24	27.6 1.7	9.60 .78	10.1 2.5	10.75 .24	16.7 1.6
21.9	47.14 .25	39.2 0.6	24.88 .28	26.1 1.2	10.47 .95	7.9 2.0	11.00 .27	15.3 1.1
31.8	47.40 .27	38.5 0.9	25.17 .31	25.1 0.7	11.50 1.08	6.1 1.5	11.29 .30	14.5 −0.6
Apr. 10.8	47.68 .29	37.5 1.0	25.49 .33	24.7 −0.1	12.64 1.18	4.9 0.9	11.61 .33	14.1 0.0
20.8	47.98 .30	36.4 1.2	25.83 .35	24.8 +0.4	13.85 1.23	4.3 −0.3	11.94 .35	14.4 +0.5
30.8	48.29 .31	35.1 1.4	26.19 .36	25.5 1.0	15.10 1.24	4.3 +0.3	12.30 .36	15.1 1.0
May 10.7	48.60 .32	33.6 1.5	26.55 .36	26.8 1.5	16.33 1.20	5.0 1.0	12.66 .36	16.4 1.5
20.7	48.92 .31	32.1 1.5	26.90 .35	28.5 1.9	17.51 1.13	6.2 1.5	13.02 .35	18.2 2.0
30.7	49.23 .30	30.6 1.5	27.24 .33	30.7 2.3	18.60 1.03	8.0 2.0	13.37 .34	20.4 2.4
June 9.7	49.53 .29	29.1 1.5	27.56 .30	33.2 2.7	19.57 .89	10.3 2.5	13.70 .32	23.0 2.7
19.6	49.80 .26	27.6 1.4	27.85 .27	36.1 2.9	20.38 .73	13.0 2.9	14.00 .28	25.8 3.0
29.6	50.05 .23	26.3 1.3	28.10 .23	39.1 3.1	21.03 .55	16.1 3.2	14.26 .25	28.9 3.1
July 9.6	50.27 .20	25.1 1.1	28.31 .18	42.3 3.2	21.49 .36	19.4 3.4	14.49 .20	32.1 3.2
19.5	50.44 .15	24.0 0.9	28.47 .13	45.5 3.2	21.74 +.15	22.9 3.5	14.67 .15	35.3 3.2
29.5	50.58 .11	23.2 0.8	28.57 .08	48.7 3.2	21.79 −.06	26.5 3.6	14.80 .10	38.6 3.2
Aug. 8.5	50.66 .06	22.5 0.6	28.62 +.03	51.8 3.0	21.63 .26	30.1 3.6	14.87 +.05	41.7 3.1
18.5	50.70 +.02	22.0 0.4	28.62 −.03	54.8 2.9	21.26 .46	33.6 3.5	14.89 .00	44.7 2.9
28.4	50.70 −.02	21.7 0.2	28.57 .08	57.5 2.6	20.71 .65	37.1 3.3	14.87 −.05	47.5 2.7
Sept. 7.4	50.66 .06	21.6 −0.1	28.47 .12	60.0 2.3	19.97 .82	40.3 3.1	14.79 .10	50.0 2.4
17.4	50.58 .09	21.6 +0.1	28.32 .16	62.1 2.0	19.06 .98	43.2 2.8	14.67 .13	52.2 2.0
27.4	50.47 .12	21.8 0.2	28.14 .19	63.9 1.6	18.01 1.11	45.8 2.4	14.52 .17	54.1 1.7
Oct. 7.3	50.34 .14	22.0 0.3	27.93 .21	65.3 1.2	16.84 1.22	48.0 2.0	14.34 .19	55.6 1.3
17.3	50.20 .15	22.4 0.4	27.71 .23	66.3 0.7	15.58 1.30	49.7 1.5	14.14 .20	56.6 0.8
27.3	50.05 .15	22.8 0.4	27.48 .23	66.8 +0.3	14.25 1.34	50.9 1.0	13.94 .21	57.2 +0.4
Nov. 6.2	49.91 .13	23.2 0.5	27.24 .23	66.8 −0.2	12.89 1.36	51.6 +0.4	13.73 .20	57.4 −0.1
16.2	49.78 .12	23.7 0.5	27.02 .21	66.4 0.7	11.53 1.34	51.7 −0.2	13.53 .19	57.1 0.5
26.2	49.67 .10	24.3 0.5	26.81 .19	65.4 1.2	10.20 1.29	51.3 0.8	13.34 .17	56.4 1.0
Dec. 6.2	49.59 .07	24.8 0.5	26.63 .17	64.0 1.6	8.96 1.19	50.2 1.3	13.18 .15	55.2 1.4
16.1	49.53 .04	25.3 0.5	26.48 .13	62.2 2.0	7.82 1.07	48.6 1.9	13.04 .12	53.6 1.8
26.1	49.51 −.01	25.9 0.5	26.37 .09	60.0 2.3	6.83 .90	46.4 2.4	12.94 .08	51.6 2.1
36.1	49.52 +.03	26.4 +0.5	26.29 −.06	57.5 −2.6	6.01 −.71	43.9 −2.8	12.88 −.04	49.3 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Cygni.		α Cephei.		1 Pegasi.		β Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 21 7	° ′ 29 42	h m 21 15	° ′ 62 2	h m 21 16	° ′ 19 15	h m 21 24	° ′ 6 7
	s	″	s	″	s	″	s	″
Jan. 1.1	29.78 −.05	23.5 −2.1	29.77 −.24	54.8 −2.6	10.88 −.04	41.3 −1.7	50.41 −.02	51.9 +0.6
11.1	29.75 −.02	21.3 2.3	29.56 .17	52.1 2.9	10.85 −.01	39.5 1.8	50.41 +.01	52.5 0.6
21.1	29.75 +.02	18.9 2.4	29.43 .10	49.1 3.1	10.87 +.03	37.6 1.9	50.43 .04	53.0 0.5
31.0	29.79 .06	16.5 2.4	29.37 −.02	45.8 3.2	10.91 .06	35.7 1.8	50.49 .07	53.5 0.4
Feb. 10.0	29.87 .10	14.2 2.2	29.39 +.06	42.6 3.2	10.99 .09	33.9 1.7	50.57 .10	53.8 0.2
20.0	29.98 .13	12.1 2.0	29.49 .14	39.4 3.1	11.10 .13	32.3 1.5	50.69 .13	54.0 +0.1
Mar. 1.9	30.14 .17	10.2 1.7	29.68 .22	36.4 2.8	11.24 .16	30.9 1.2	50.84 .16	53.9 −0.1
11.9	30.33 .21	8.6 1.4	29.94 .30	33.8 2.4	11.42 .19	29.8 0.9	51.01 .19	53.7 0.4
21.9	30.55 .24	7.4 0.9	30.27 .36	31.6 2.0	11.63 .22	29.0 0.5	51.22 .22	53.2 0.6
31.9	30.81 .27	6.7 −0.4	30.67 .42	29.8 1.4	11.87 .25	28.7 −0.1	51.45 .25	52.4 0.8
Apr. 10.8	31.09 .29	6.5 0.0	31.12 .47	28.7 0.8	12.14 .28	28.8 +0.3	51.71 .27	51.5 1.1
20.8	31.40 .31	6.8 +0.5	31.60 .50	28.1 −0.2	12.42 .30	29.3 0.7	51.99 .29	50.3 1.3
30.8	31.72 .33	7.6 1.0	32.11 .51	28.2 +0.4	12.73 .31	30.3 1.2	52.28 .30	48.9 1.5
May 10.8	32.05 .33	8.9 1.5	32.63 .52	28.9 1.0	13.04 .32	31.6 1.5	52.60 .31	47.3 1.6
20.7	32.38 .33	10.6 1.9	33.15 .50	30.2 1.6	13.36 .32	33.3 1.8	52.91 .32	45.7 1.7
30.7	32.70 .32	12.6 2.2	33.64 .48	32.1 2.1	13.67 .31	35.3 2.1	53.23 .31	43.9 1.7
June 9.7	33.01 .30	15.0 2.5	34.10 .44	34.4 2.5	13.98 .29	37.5 2.3	53.54 .30	42.2 1.7
19.6	33.30 .27	17.6 2.7	34.51 .38	37.1 2.9	14.26 .27	40.0 2.4	53.83 .28	40.4 1.7
29.6	33.55 .23	20.4 2.8	34.87 .32	40.2 3.2	14.52 .24	42.4 2.5	54.10 .26	38.8 1.6
July 9.6	33.77 .20	23.3 2.9	35.16 .25	43.6 3.4	14.74 .20	45.0 2.5	54.34 .22	37.3 1.4
19.6	33.94 .15	26.2 2.9	35.38 .18	47.1 3.6	14.92 .16	47.5 2.5	54.55 .19	36.0 1.3
29.5	34.07 .10	29.0 2.8	35.51 .10	50.7 3.6	15.06 .12	50.0 2.4	54.71 .14	34.8 1.1
Aug. 8.5	34.15 .06	31.8 2.7	35.57 +.02	54.3 3.6	15.16 .07	52.3 2.2	54.83 .10	33.8 0.9
18.5	34.19 +.01	34.4 2.5	35.55 −.06	57.9 3.5	15.21 +.03	54.4 2.0	54.91 .05	33.0 0.7
28.5	34.17 −.04	36.8 2.3	35.44 .14	61.3 3.3	15.22 −.01	56.4 1.8	54.94 +.01	32.5 0.5
Sept. 7.4	34.11 .08	38.9 2.0	35.27 .21	64.5 3.1	15.18 .05	58.0 1.6	54.93 −.03	32.1 0.3
17.4	34.01 .11	40.7 1.7	35.02 .27	67.4 2.8	15.11 .09	59.5 1.3	54.89 .06	31.9 −0.1
27.4	33.88 .14	42.3 1.3	34.72 .33	70.0 2.4	15.01 .12	60.6 1.0	54.81 .09	31.9 +0.1
Oct. 7.3	33.72 .17	43.4 1.0	34.37 .37	72.2 2.0	14.88 .14	61.5 0.7	54.70 .11	32.1 0.2
17.3	33.55 .18	44.2 0.6	33.98 .40	74.0 1.5	14.73 .15	62.0 +0.4	54.58 .13	32.4 0.3
27.3	33.36 .18	44.6 +0.2	33.57 .42	75.2 1.0	14.57 .16	62.2 0.0	54.44 .14	32.8 0.4
Nov. 6.3	33.18 .18	44.6 −0.2	33.14 .43	75.9 +0.4	14.42 .16	62.1 −0.3	54.31 .13	33.2 0.5
16.2	33.00 .17	44.2 0.6	32.71 .42	76.0 −0.1	14.26 .14	61.7 0.6	51.18 .12	33.8 0.6
26.2	32.84 .15	43.4 1.0	32.30 .40	75.6 0.7	14.13 .13	61.0 0.9	54.06 .11	34.3 0.6
Dec. 6.2	32.70 .13	42.2 1.4	31.91 .37	74.6 1.3	14.01 .11	59.9 1.2	53.96 .09	35.0 0.6
16.2	32.58 .10	40.7 1.7	31.56 .33	73.0 1.8	13.91 .08	58.6 1.4	53.89 .06	35.6 0.6
26.1	32.49 .07	38.8 2.0	31.25 .27	71.0 2.3	13.84 .05	57.1 1.6	53.84 .04	36.2 0.6
36.1	32.44 −.04	36.7 −2.2	31.01 −.21	68.5 −2.7	13.80 −.03	55.4 −1.8	53.81 −.01	36.8 +0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pegasi. (*Markab.*)		*o Cephei.		θ Piscium.		ι Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 22 58	° ′ 14 31	h m 23 13	° ′ 67 24	h m 23 21	° ′ 5 40	h m 23 33	° ′ 4 56
	s	″	s	″	s	″	s	″
Jan. 1.2	24.61 −.09	18.2 −1.0	22.52 −.46	69.8 −1.1	30.18 −.09	49.2 −0.8	23.86 −.10	11.9 −0.8
11.2	24.52 .08	17.0 1.2	22.08 .42	68.4 1.6	30.09 .08	48.4 0.8	23.77 .08	11.1 0.8
21.1	24.46 .06	15.8 1.2	21.68 .37	66.6 2.1	30.01 .06	47.5 0.8	23.69 .07	10.3 0.8
31.1	24.41 −.03	14.5 1.3	21.34 .30	64.2 2.5	29.96 .04	46.7 0.8	23.63 .05	9.5 0.7
Feb. 10.1	24.39 .00	13.3 1.2	21.08 .22	61.6 2.8	29.93 −.02	46.0 0.7	23.59 −.03	8.8 0.6
20.1	24.40 +.03	12.1 1.1	20.91 .12	58.7 3.0	29.92 +.01	45.3 0.5	23.57 .00	8.2 0.5
Mar. 2.0	24.44 .06	11.1 0.9	20.83 −.02	55.6 3.0	29.94 .04	44.9 0.4	23.58 +.03	7.8 0.3
12.0	24.52 .10	10.3 0.7	20.86 +.08	52.6 2.9	29.99 .07	44.6 −0.1	23.63 .06	7.6 −0.1
22.0	24.63 .13	9.7 0.4	20.99 .18	49.8 2.7	30.08 .11	44.6 +0.1	23.71 .10	7.6 +0.1
Apr. 1.0	24.78 .17	9.4 −0.1	21.23 .28	47.2 2.4	30.21 .15	44.8 0.4	23.82 .14	7.9 0.4
10.9	24.97 .21	9.5 +0.3	21.56 .38	44.9 2.0	30.38 .18	45.3 0.7	23.98 .17	8.4 0.7
20.9	25.19 .24	10.0 0.6	21.98 .46	43.1 1 6	30.58 .22	46.2 1.0	24.17 .21	9.3 1.0
30.9	25.45 .27	10.7 0.9	22.48 .53	41.8 1.0	30.82 .25	47.3 1.2	24.40 .24	10.4 1.2
May 10.8	25.73 .29	11.8 1.3	23.04 .58	41.0 −0.5	31.08 .28	48.7 1.5	24.66 .27	11.8 1.5
20.8	26.04 .31	13.3 1.6	23.64 .61	40.8 +0.1	31.37 .30	50.3 1.7	24.95 .30	13.4 1.7
30.8	26.36 .32	15.0 1.8	24.27 .63	41.2 0.7	31.68 .31	52.1 1.9	25.25 .31	15.2 1.9
June 9.8	26.68 .32	17.0 2.0	24.90 .63	42.2 1.2	32.00 .32	54.1 2.0	25.57 .32	17.2 2.0
19.7	27.00 .32	19.1 2.2	25.53 .61	43.7 1.8	32.32 .32	56.2 2.1	25.89 .32	19.2 2.1
29.7	27.31 .30	21.3 2.3	26.12 .57	45.7 2.2	32.64 .31	58.3 2.1	26.21 .31	21.3 2.1
July 9.7	27.60 .28	23.7 2.3	26.67 .52	48.2 2.6	32.94 .29	60.4 2.1	26.52 .30	23.4 2.1
19.7	27.87 .25	26.0 2.3	27.17 .46	51.0 3.0	33.22 .27	62.5 2.0	26.80 .27	25.5 2.0
29.6	28.11 .22	28.3 2.2	27.60 .39	54.2 3.3	33.47 .23	64.5 1.9	27.06 .24	27.4 1.9
Aug. 8.6	28.30 .18	30.5 2.1	27.95 .31	57.6 3.5	33.68 .20	66.2 1.7	27.29 .21	29.2 1.7
18.6	28.46 .14	32.6 2.0	28.21 .22	61.2 3.6	33.86 .16	67.9 1.5	27.48 .17	30.8 1.5
28.5	28.58 .09	34.4 1.8	28.39 .13	64.9 3.7	34.00 .12	69.3 1.3	27.63 .13	32.2 1.3
Sept. 7.5	28.65 .05	36.1 1.6	28.48 +.05	68.6 3.7	34.10 .08	70.5 1.1	27.74 .09	33.3 1.0
17.5	28.69 +.02	37.6 1.3	28.49 −.04	72.3 3.6	34.16 .04	71.5 0.8	27.82 .05	34.2 0.8
27.5	28.68 −.02	38.8 1.1	28.40 .12	75.8 3.4	34.19 +.01	72.2 0.6	27.85 +.02	34.9 0.6
Oct. 7.4	28.65 .05	39.7 0.9	28.24 .20	79.2 3.2	34.18 −.02	72.7 0.4	27.86 −.01	35.4 0.3
17.4	28.58 .07	40.5 0.6	28.00 .27	82.2 2.9	34.14 .05	73.0 +0.2	27.83 .04	35.6 +0.1
27.4	28.50 .09	41.0 0.3	27.70 .33	85.0 2.5	34.07 .07	73.1 0.0	27.78 .06	35.7 0.0
Nov. 6.4	28.40 .11	41.2 +0.1	27.34 .39	87.3 2.1	33.99 .09	73.0 −0.2	27.71 .08	35.6 −0.2
16.3	28.28 .12	41.2 −0.1	26.93 .43	89.1 1.6	33.90 .10	72.8 0.3	27.62 .09	35.3 0.3
26.3	28.16 .12	40.9 0.4	26.48 .46	90.5 1.0	33.79 .10	72.4 0.5	27.52 .10	34.9 0.5
Dec. 6.3	28.05 .12	40.5 0.6	26.01 .48	91.2 +0.5	33.69 .11	71.8 0.6	27.42 .10	34.3 0.6
16.2	27.93 .11	39.8 0.8	25.53 .48	91.4 −0.1	33.58 .10	71.2 0.7	27.32 .10	33.7 0.7
26.2	27.83 .10	38.9 1.0	25.05 .47	91.0 0.7	33.48 .10	70.5 0.8	27.21 .10	33.0 0.7
36.2	27.74 −.08	37.8 −1.1	24.59 −.44	90.0 −1.3	33.39 −.09	69.7 −0.8	27.12 −.09	32.2 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Capricorni. Right Ascension.	μ Capricorni. Declination *South.*	*79 Draconis. Right Ascension.	*79 Draconis. Declination *North.*	α Aquarii. Right Ascension.	α Aquarii. Declination *South.*	α Gruis. Right Ascension.	α Gruis. Declination *South.*
	h m 21 46	° ′ 14 8	h m 21 51	° ′ 73 5	h m 21 59	° ′ 0 55	h m 22 0	° ′ 47 34
	s	″	s	″	s	″	s	″
Jan. 1.1	20.37 −.03	64.7 +0.2	13.06 −.54	72.2 −2.1	13.86 −.04	77.4 +0.8	11.05 −.09	47.8 −1.3
11.1	20.35 −.01	64.9 +0.1	12.56 .44	69.9 2.5	13.82 −.02	78.2 0.8	10.98 −.05	46.3 1.6
21.1	20.36 +.02	65.0 0.0	12.16 .33	67.1 2.9	13.81 .00	79.0 0.7	10.95 .00	44.6 1.9
31.0	20.40 .05	64.9 −0.1	11.89 .21	64.1 3.1	13.83 +.03	79.6 0.6	10.97 +.04	42.6 2.1
Feb. 10.0	20.47 .08	64.7 0.3	11.75 −.07	60.9 3.2	13.88 .06	80.2 0.5	11.04 .09	40.4 2.3
20.0	20.57 .12	64.3 0.5	11.74 +.06	57.6 3.2	13.96 .09	80.6 0.3	11.14 .13	38.0 2.4
Mar. 2.0	20.70 .15	63.7 0.7	11.88 .20	54.4 3.1	14.06 .12	80.8 +0.1	11.30 .18	35.5 2.5
11.9	20.86 .18	62.9 0.9	12.14 .33	51.4 2.8	14.20 .16	80.8 −0.2	11.50 .22	32.9 2.6
21.9	21.05 .21	62.0 1.1	12.54 .45	48.8 2.4	14.38 .19	80.5 0.4	11.74 .26	30.4 2.6
31.9	21.28 .24	60.8 1.2	13.05 .56	46.5 2.0	14.58 .22	79.9 0.7	12.03 .31	27.8 2.5
Apr. 10.9	21.53 .26	59.5 1.4	13.67 .65	44.8 1.4	14.81 .25	79.1 1.0	12.36 .34	25.4 2.4
20.8	21.80 .29	58.0 1.6	14.35 .72	43.6 0.9	15.07 .27	78.0 1.2	12.72 .38	23.0 2.2
30.8	22.10 .31	56.4 1.7	15.10 .76	43.1 −0.2	15.35 .29	76.6 1.5	13.11 .40	20.9 2.0
May 10.8	24.42 .32	54.7 1.7	15.87 .78	43.1 +0.4	15.65 .31	75.0 1.6	13.52 .42	19.0 1.8
20.7	22.74 .33	53.0 1.7	16.66 .77	43.8 1.0	15.97 .31	73.3 1.8	13.96 .44	17.3 1.5
30.7	23.07 .33	51.3 1.7	17.42 .74	45.1 1.5	16.28 .32	71.5 1.9	14.40 .44	16.0 1.2
June 9.7	23.39 .32	49.6 1.6	18.14 .69	46.9 2.1	16.60 .31	69.5 1.9	14.83 .43	15.0 0.8
19.7	23.70 .30	48.0 1.5	18.81 .63	49.2 2.5	16.90 .30	67.6 1.9	15.26 .41	14.4 −0.4
29.6	24.00 .28	46.6 1.3	19.40 .54	51.9 2.9	17.19 .27	65.7 1.9	15.66 .38	14.2 0.0
July 9.6	24.26 .25	45.4 1.1	19.89 .44	55.0 3.2	17.45 .24	63.8 1.8	16.03 .35	14.4 +0.4
19.6	24.49 .21	44.3 0.9	20.27 .33	58.4 3.5	17.68 .21	62.1 1.6	16.35 .30	14.9 0.7
29.6	24.68 .17	43.5 0.7	20.54 .21	62.0 3.6	17.87 .17	60.6 1.4	16.63 .24	15.9 1.1
Aug. 8.5	24.83 .13	43.0 0.4	20.69 +.09	65.7 3.7	18.02 .13	59.2 1.2	16.84 .19	17.1 1.4
18.5	24.94 .08	42.6 −0.2	20.72 −.03	69.4 3.7	18.12 .08	58.1 1.0	17.00 .12	18.6 1.6
28.5	24.99 +.04	42.5 0.0	20.63 .15	73.1 3.6	18.19 +.04	57.2 0.8	17.09 +.06	20.3 1.8
Sept. 7.4	25.01 −.01	42.6 +0.2	20.42 .27	76.7 3.5	18.21 .00	56.5 0.6	17.11 .00	22.2 1.9
17.4	24.98 .04	42.9 0.3	20.10 .37	80.1 3.3	18.19 −.03	56.0 0.4	17.08 −.06	24.1 1.9
27.4	24.92 .08	43.3 0.4	19.68 .47	83.3 3.0	18.14 .07	55.7 −0.2	16.99 .11	26.0 1.8
Oct. 7.4	24.82 .10	43.8 0.5	19.16 .55	86.1 2.6	18.05 .10	55.6 0.0	16.85 .15	27.8 1.7
17.3	24.71 .12	44.3 0.6	18.58 .62	88.5 2.2	17.95 .11	55.7 +0.2	16.68 .19	29.4 1.5
27.3	24.58 .13	45.0 0.6	17.93 .67	90.4 1.7	17.83 .12	55.9 0.3	16.48 .21	30.8 1.2
Nov. 6.3	24.45 .13	45.6 0.6	17.23 .71	91.9 1.2	17.71 .13	56.3 0.4	16.26 .22	31.8 0.9
16.3	24.32 .13	46.1 0.6	16.51 .72	92.7 +0.6	17.58 .12	56.8 0.5	16.05 .21	32.5 0.5
26.2	24.20 .11	46.7 0.5	15.78 .72	93.0 0.0	17.46 .11	57.4 0.6	15.84 .20	32.8 +0.1
Dec. 6.2	24.09 .10	47.2 0.4	15.07 .70	92.7 −0.6	17.36 .10	58.1 0.7	15.65 .18	32.7 −0.3
16.2	24.01 .07	47.6 0.4	14.38 .65	91.8 1.2	17.26 .08	58.8 0.7	15.48 .15	32.2 0.7
26.1	23.95 .05	47.9 0.3	13.76 .59	90.4 1.7	17.19 .06	59.6 0.8	15.35 .11	31.3 1.1
36.1	23.91 −.02	48.2 +0.2	13.21 −.50	88.3 −2.3	17.14 −.04	60.3 +0.8	13.26 −.07	30.0 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Aquarii.		π Aquarii.		η Aquarii.		*226 Cephei (B.)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 22 10	° ′ 8 24	h m 22 18	° ′ 0 43	h m 22 28	° ′ 0 46	h m 22 29	° ′ 75 33
	s	″	s	″	s	″	s	″
Jan. 1.2	6.14 −.05	63.5 +0.4	45.77 −.06	53.6 −0.8	48.15 −.07	25.0 +0.7	57.94 −.73	88.2 −1.6
11.1	6.10 −.03	63.9 0.4	45.72 .04	52.8 0.8	48.10 .04	25.8 0.7	57.25 .63	86.4 2.1
21.1	6.09 .00	64.2 0.3	45.70 −.01	52.0 0.8	48.06 −.02	26.5 0.7	56.67 .52	84.1 2.5
31.1	6.10 +.03	64.5 +0.2	45.69 +.01	51.2 0.7	48.06 .00	27.1 0.6	56.21 .39	81.3 2.9
Feb. 10.0	6.14 .06	64.6 0.0	45.72 .04	50.6 0.5	48.07 +.03	27.6 0.4	55.89 .24	78.3 3.1
20.0	6.21 .09	64.5 −0.2	45.78 .07	50.2 0.4	48.12 .06	27.9 +0.3	55.73 −.08	75.2 3.2
Mar. 2.0	6.31 .12	64.2 0.4	45.87 .10	49.9 −0.1	48.20 .09	28.1 0.0	55.72 +.08	72.0 3.1
12.0	6.44 .15	63.7 0.6	45.99 .14	49.9 +0.1	48.31 .13	28.0 −0.2	55.89 .24	68.9 3.0
21.9	6.61 .18	63.0 0.8	46.14 .17	50.1 0.4	48.46 .16	27.7 0.4	56.21 .40	66.0 2.7
31.9	6.81 .21	62.0 1.1	46.33 .20	50.6 0.6	48.63 .19	27.1 0.7	56.68 .54	63.4 2.3
Apr. 10.9	7.04 .24	60.8 1.3	46.55 .23	51.4 0.9	48.84 .23	26.3 1.0	57.28 .66	61.3 1.9
20.9	7.29 .27	59.5 1.5	46.79 .26	52.4 1.2	49.09 .25	25.2 1.3	58.00 .76	59.6 1.3
30.8	7.58 .29	57.9 1.6	47.07 .28	53.8 1.4	49.35 .28	23.8 1.5	58.80 .83	58.6 0.8
May 10.8	7.88 .31	56.2 1.8	47.36 .30	55.3 1.6	49.65 .30	22.2 1.7	59.67 .88	58.1 −0.2
20.8	8.19 .32	54.4 1.8	47.67 .31	57.0 1.8	49.95 .31	20.4 1.8	60.57 .90	58.3 +0.4
30.7	8.51 .32	52.5 1.8	47.98 .32	58.9 1.9	50.27 .32	18.5 1.9	61.47 .89	59.0 1.0
June 9.7	8.84 .32	50.7 1.8	48.30 .31	60.9 2.0	50.59 .32	16.6 2.0	62.35 .86	60.3 1.6
19.7	9.15 .30	48.9 1.8	48.62 .30	62.9 2.0	50.90 .31	14.6 2.0	63.18 .80	62.2 2.1
29.7	9.44 .28	47.2 1.6	48.91 .28	64.9 2.0	51.20 .29	12.6 1.9	63.94 .72	64.5 2.6
July 9.6	9.72 .26	45.6 1.5	49.18 .25	66.8 1.9	51.48 .26	10.7 1.8	64.62 .62	67.3 2.9
19.6	9.96 .22	44.2 1.3	49.42 .22	68.7 1.7	51.73 .23	8.9 1.7	65.18 .50	70.4 3.3
29.6	10.17 .19	43.0 1.1	49.63 .19	70.3 1.6	51.94 .20	7.3 1.5	65.63 .36	73.8 3.5
Aug. 8.6	10.33 .14	42.0 0.8	49.79 .15	71.8 1.4	52.12 .16	5.9 1.3	65.94 .25	77.4 3.7
18.5	10.45 .10	41.3 0.6	49.92 .10	73.1 1.2	52.25 .11	4.7 1.1	66.13 +.11	81.1 3.8
28.5	10.53 .06	40.8 0.4	50.00 .06	74.1 0.9	52.35 .07	3.7 0.9	66.17 −.03	84.9 3.8
Sept. 7.5	10.56 +.01	40.5 −0.2	50.04 +.02	75.0 0.7	52.40 +.03	2.9 0.6	66.08 .16	88.7 3.7
17.4	10.56 −.02	40.5 0.0	50.04 −.02	75.6 0.5	52.41 −.01	2.4 0.4	65.85 .29	92.4 3.6
27.4	10.52 .06	40.6 +0.2	50.00 .05	76.0 0.3	52.38 .04	2.1 −0.2	65.50 .41	95.8 3.3
Oct. 7.4	10.44 .08	40.9 0.3	49.93 .08	76.2 +0.1	52.32 .07	2.0 0.0	65.04 .52	99.0 3.0
17.4	10.35 .10	41.2 0.4	49.85 .10	76.2 −0.1	52.24 .09	2.0 +0.1	64.46 .62	101.9 2.7
27.3	10.24 .12	41.7 0.5	49.74 .11	76.0 0.2	52.14 .11	2.2 0.3	63.80 .70	104.4 2.3
Nov. 6.3	10.11 .12	42.3 0.6	49.62 .12	75.7 0.4	52.03 .11	2.6 0.4	63.07 .76	106.5 1.8
16.3	9.99 .12	42.9 0.6	49.50 .12	75.2 0.5	51.91 .12	3.1 0.5	62.28 .81	108.0 1.2
26.3	9.87 .11	43.5 0.6	49.38 .11	74.7 0.6	51.79 .11	3.6 0.6	61.45 .83	108.9 +0.6
Dec. 6.2	9.76 .10	44.1 0.6	49.27 .10	74.0 0.7	51.68 .10	4.3 0.7	60.61 .83	109.2 0.0
16.2	9.67 .08	44.6 0.6	49.18 .09	73.3 0.7	51.59 .09	5.0 0.7	59.79 .81	108.9 −0.6
26.2	9.60 .06	45.2 0.5	49.10 .07	72.5 0.8	51.50 .07	5.7 0.7	59.00 .76	108.0 1.2
36.1	9.54 −.04	45.6 +0.4	49.04 −.05	71.7 −0.8	51.44 −.05	6.5 +0.7	58.26 −.69	106.6 −1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Pegasi.		*ι Cephei.		λ Aquarii.		α Piscis Australis. (*Fomalhaut.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 22 35	° ′ 10 9	h m 22 45	° ′ 65 31	h m 22 45	° ′ 8 15	h m 22 50	° ′ 30 17
	s	″	s	″	s	″	s	″
Jan. 1.2	6.02 −.08	64.3 −1.0	7.00 −.40	66.5 −1.5	57.69 −.07	27.1 +0.5	36.19 −.09	57.3 −0.3
11.1	5.95 .06	63.2 1.1	6.62 .35	64.7 2.0	57.63 .05	27.5 0.4	36.11 .07	56.8 0.6
21.1	5.90 .03	62.0 1.2	6.29 .29	62.5 2.4	57.59 .03	27.8 0.3	36.05 .04	56.1 0.8
31.1	5.88 −.01	60.9 1.1	6.03 .22	59.9 2.7	57.57 −.01	28.0 +0.1	36.02 −.01	55.1 1.1
Feb. 10.1	5.89 +.02	59.8 1.0	5.85 .14	57.0 3.0	57.57 +.02	28.1 0.0	36.02 +.02	53.9 1.3
20.0	5.92 .05	58.8 0.9	5.75 −.05	54.0 3.0	57.60 .05	27.9 −0.2	36.06 .05	52.5 1.6
Mar. 2.0	5.99 .08	58.0 0.7	5.75 +.04	50.9 3.0	57.67 .08	27.6 0.4	36.12 .09	50.8 1.8
12.0	6.09 .12	57.4 0.4	5.84 .14	47.9 2.9	57.76 .11	27.0 0.7	36.23 .12	48.9 1.9
22.0	6.23 .15	57.1 −0.2	6.03 .23	45.2 2.6	57.89 .15	26.3 0.9	36.37 .16	46.9 2.1
31.9	6.40 .19	57.1 +0.2	6.31 .32	42.7 2.2	58.06 .18	25.2 1.1	36.55 .20	44.7 2.2
Apr. 10.9	6.61 .22	57.4 0.5	6.68 .40	40.7 1.8	58.26 .22	24.0 1.3	36.76 .23	42.5 2.3
20.9	6.84 .25	58.1 0.8	7.12 .47	39.2 1.3	58.49 .25	22.5 1.5	37.02 .27	40.2 2.3
30.8	7.11 .28	59.1 1.2	7.62 .52	38.2 0.7	58.75 .27	20.9 1.7	37.30 .30	37.9 2.3
May 10.8	7.40 .30	60.4 1.4	8.16 .56	37.8 −0.1	59.03 .30	19.1 1.8	37.62 .33	35.7 2.2
20.8	7.71 .31	62.0 1.7	8.74 .58	38.0 +0.5	59.34 .31	17.2 1.9	37.96 .35	33.5 2.1
30.8	8.03 .32	63.8 1.9	9.33 .59	38.8 1.1	59.66 .32	15.3 2.0	38.31 .36	31.5 1.9
June 9.7	8.35 .32	65.8 2.1	9.91 .57	40.1 1.6	59.98 .32	13.3 1.9	38.67 .36	29.7 1.7
19.7	8.66 .31	67.9 2.2	10.48 .55	42.0 2.1	60.31 .32	11.4 1.9	39.03 .36	28.2 1.4
29.7	8.96 .29	70.2 2.2	11.01 .50	44.3 2.5	60.62 .30	9.5 1.8	39.38 .34	26.9 1.1
July 9.7	9.24 .26	72.4 2.2	11.48 .44	47.0 2.9	60.91 .28	7.8 1.6	39.71 .32	26.0 0.8
19.6	9.49 .23	74.6 2.2	11.90 .38	50.1 3.2	61.17 .25	6.3 1.4	40.02 .29	25.3 0.4
29.6	9.71 .20	76.7 2.0	12.24 .31	53.5 3.4	61.41 .21	5.0 1.2	40.28 .25	25.1 −0.1
Aug. 8.6	9.88 .16	78.7 1.9	12.51 .23	57.0 3.6	61.60 .17	3.9 1.0	40.51 .20	25.1 +0.2
18.5	10.02 .11	80.5 1.7	12.70 .14	60.6 3.7	61.76 .13	3.1 0.7	40.69 .16	25.6 0.6
28.5	10.11 .07	82.2 1.5	12.79 +.06	64.4 3 7	61.87 .09	2.5 0.4	40.83 .11	26.3 0.8
Sept. 7.5	10.16 +.03	83.6 1.3	12.81 −.03	68.0 3.6	61.94 .05	2.2 −0.2	40.91 .06	27.2 1.1
17.5	10.18 −.01	84.7 1.1	12.74 .11	71.6 3.5	61.96 +.01	2.1 0.0	40.94 +.01	28.4 1.2
27.4	10.15 .04	85.7 0.8	12.60 .18	74.9 3.2	61.96 −.03	2.2 +0.2	40.94 −.03	29.7 1.3
Oct. 7.4	10.10 .07	86.4 0.6	12.38 .25	78.1 3.0	61.91 .06	2.5 0.3	40.89 .07	31.1 1.4
17.4	10.01 .09	86.8 0.3	12.10 .31	80.9 2.6	61.84 .08	2.9 0.5	40.80 .10	32.5 1.4
27.4	9.91 .11	87.1 +0.1	11.76 .36	83.3 2.2	61.75 .10	3.4 0.6	40.69 .12	33.8 1.3
Nov. 6.3	9.80 .12	87.1 −0.1	11.38 .40	85.2 1.7	61.65 .11	4.0 0.6	40.57 .13	35.0 1.1
16.3	9.68 .12	86.8 0.3	10.96 .43	86.7 1.2	61.54 .11	4.6 0.6	40.43 .14	36.0 0.9
26.3	9.56 .12	86.4 0.5	10.52 .45	87.5 +0.6	61.42 .11	5.3 0.6	40.29 .14	36.9 0.7
Dec. 6.2	9.45 .11	85.8 0.7	10.07 .45	87.9 0.0	61.31 .11	5.9 0.6	40.15 .13	37.4 0.4
16.2	9.34 .10	85.0 0.9	9.63 .44	87.6 −0.6	61.21 .10	6.5 0.6	40.02 .12	37.7 +0.2
26.2	9.24 .06	84.1 1.0	9.19 .42	86.7 1.1	61.12 .08	7.1 0.5	39.91 .10	37.7 −0.1
36.2	9.17 −.06	83.1 −1.1	8.79 −.38	85.3 −1.7	61.05 −.06	7.5 +0.4	39.81 −.08	37.5 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pegasi. (*Markab.*)		*ο Cephei.		θ Piscium.		ι Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 22 58	° ′ 14 31	h m 23 13	° ′ 67 24	h m 23 21	° ′ 5 40	h m 23 33	° ′ 4 56
	s	″	s	″	s	″	s	″
Jan. 1.2	24.61 −.09	18.2 −1.0	22.52 −.46	69.8 −1.1	30.18 −.09	49.2 −0.8	23.86 −.10	11.9 −0.8
11.2	24.52 .08	17.0 1.2	22.08 .42	68.4 1.6	30.09 .08	48.4 0.8	23.77 .08	11.1 0.8
21.1	24.46 .06	15.8 1.2	21.68 .37	66.6 2.1	30.01 .06	47.5 0.8	23.69 .07	10.3 0.8
31.1	24.41 −.03	14.5 1.3	21.34 .30	64.2 2.5	29.96 .04	46.7 0.8	23.63 .05	9.5 0.7
Feb. 10.1	24.39 .00	13.3 1.2	21.08 .22	61.6 2.8	29.93 −.02	46.0 0.7	23.59 −.03	8.8 0.6
20.1	24.40 +.03	12.1 1.1	20.91 .12	58.7 3.0	29.92 +.01	45.3 0.5	23.57 .00	8.2 0.5
Mar. 2.0	24.44 .06	11.1 0.9	20.83 −.02	55.6 3.0	29.94 .04	44.9 0.4	23.58 +.03	7.8 0.3
12.0	24.52 .10	10.3 0.7	20.86 +.08	52.6 2.9	29.99 .07	44.6 −0.1	23.63 .06	7.6 −0.1
22.0	24.63 .13	9.7 0.4	20.99 .18	49.8 2.7	30.08 .11	44.6 +0.1	23.71 .10	7.6 +0.1
Apr. 1.0	24.78 .17	9.4 −0.1	21.23 .28	47.2 2.4	30.21 .15	44.8 0.4	23.82 .14	7.9 0.4
10.9	24.97 .21	9.5 +0.3	21.56 .39	44.9 2.0	30.38 .18	45.3 0.7	23.98 .17	8.4 0.7
20.9	25.19 .24	10.0 0.6	21.98 .46	43.1 1.6	30.58 .22	46.2 1.0	24.17 .21	9.3 1.0
30.9	25.45 .27	10.7 0.9	22.48 .53	41.8 1.0	30.82 .25	47.3 1.2	24.40 .24	10.4 1.2
May 10.8	25.73 .29	11.8 1.3	23.04 .58	41.0 −0.5	31.08 .28	48.7 1.5	24.66 .27	11.8 1.5
20.8	26.04 .31	13.3 1.6	23.64 .61	40.8 +0.1	31.37 .30	50.3 1.7	24.95 .30	13.4 1.7
30.8	26.36 .32	15.0 1.8	24.27 .63	41.2 0.7	31.68 .31	52.1 1.9	25.25 .31	15.2 1.9
June 9.8	26.68 .32	17.0 2.0	24.90 .63	42.2 1.2	32.00 .32	54.1 2.0	25.57 .32	17.2 2.0
19.7	27.00 .32	19.1 2.2	25.53 .61	43.7 1.8	32.32 .32	56.2 2.1	25.89 .32	19.2 2.1
29.7	27.31 .30	21.3 2.3	26.12 .57	45.7 2.2	32.64 .31	58.3 2.1	26.21 .31	21.3 2.1
July 9.7	27.60 .28	23.7 2.3	26.67 .52	48.2 2.6	32.94 .29	60.4 2.1	26.52 .30	23.4 2.1
19.7	27.87 .25	26.0 2.3	27.17 .46	51.0 3.0	33.22 .27	62.5 2.0	26.80 .27	25.5 2.0
29.6	28.11 .22	28.3 2.2	27.60 .39	54.2 3.3	33.47 .23	64.5 1.9	27.06 .24	27.4 1.9
Aug. 8.6	28.30 .18	30.5 2.1	27.95 .31	57.6 3.5	33.68 .20	66.2 1.7	27.29 .21	29.2 1.7
18.6	28.46 .14	32.6 2.0	28.21 .22	61.2 3.6	33.86 .16	67.9 1.5	27.48 .17	30.8 1.5
28.5	28.58 .09	34.4 1.8	28.39 .13	64.9 3.7	34.00 .12	69.3 1.3	27.63 .13	32.2 1.3
Sept. 7.5	28.65 .05	36.1 1.6	28.48 +.05	68.6 3.7	34.10 .08	70.5 1.1	27.74 .09	33.3 1.0
17.5	28.69 +.02	37.6 1.3	28.49 −.04	72.3 3.6	34.16 .04	71.5 0.8	27.82 .05	34.2 0.8
27.5	28.68 −.02	38.8 1.1	28.40 .12	75.8 3.4	34.19 +.01	72.2 0.6	27.85 +.02	34.9 0.6
Oct. 7.4	28.65 .05	39.7 0.9	28.24 .20	79.2 3.2	34.18 −.02	72.7 0.4	27.86 −.01	35.4 0.3
17.4	28.58 .07	40.5 0.6	28.00 .27	82.2 2.9	34.14 .05	73.0 +0.2	27.83 .04	35.6 +0.1
27.4	28.50 .09	41.0 0.3	27.70 .33	85.0 2.5	34.07 .07	73.1 0.0	27.78 .06	35.7 0.0
Nov. 6.4	28.40 .11	41.2 +0.1	27.34 .39	87.3 2.1	33.99 .09	73.0 −0.2	27.71 .08	35.6 −0.2
16.3	28.28 .12	41.2 −0.1	26.93 .43	89.1 1.6	33.90 .10	72.8 0.3	27.62 .09	35.3 0.3
26.3	28.16 .12	40.9 0.4	26.48 .46	90.5 1.0	33.79 .10	72.4 0.5	27.52 .10	34.9 0.5
Dec. 6.3	28.05 .12	40.5 0.6	26.01 .48	91.2 +0.5	33.69 .11	71.8 0.6	27.42 .10	34.3 0.6
16.2	27.93 .11	39.8 0.8	25.53 .48	91.4 −0.1	33.58 .10	71.2 0.7	27.32 .10	33.7 0.7
26.2	27.83 .10	38.9 1.0	25.05 .47	91.0 0.7	33.48 .10	70.5 0.8	27.21 .10	33.0 0.7
36.2	27.74 −.09	37.8 −1.1	24.59 −.44	90.0 −1.3	33.39 −.09	69.7 −0.8	27.12 −.09	32.2 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*γ Cephei.		*Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 23 34	° ′ 76 55	h m 23 48	° ′ 73 41	h m 23 52	° ′ 6 9
	s	″	s	″	s	″
Jan. 1.2	5.41 −.88	37.5 −0.6	37.78 −.69	85.0 −0.5	46.25 −.10	32.2 −0.8
11.2	4.55 .83	36.6 1.2	37.10 .66	84.2 1.1	46.15 .09	31.4 0.8
21.1	3.76 .75	35.0 1.8	36.46 .60	82.8 1.7	46.06 .08	30.6 0.8
31.1	3.06 .64	33.0 2.3	35.89 .53	80.9 2.1	45.98 .07	29.9 0.7
Feb. 10.1	2.48 .50	30.5 2.6	35.41 .43	78.5 2.5	45.92 .05	29.2 0.6
20.1	2.05 .35	27.7 2.9	35.04 .31	75.8 2.8	45.89 −.02	28.6 0.5
Mar. 2.0	1.78 −.18	24.7 3.1	34.80 .17	72.9 3.0	45.88 +.01	28.1 0.3
12.0	1.70 .00	21.6 3.1	34.70 −.03	69.9 3.0	45.90 .04	27.9 −0.1
22.0	1.79 +.18	18.6 3.0	34.74 +.11	66.9 2.9	45.96 .08	27.8 +0.1
Apr. 1.0	2.06 .36	15.7 2.7	34.92 .26	64.0 2.7	46.06 .12	28.0 0.3
10.9	2.51 .52	13.1 2.4	35.25 .40	61.4 2.4	46.20 .16	28.5 0.6
20.9	3.11 .67	10.9 2.0	35.72 .52	59.2 2.0	46.37 .19	29.3 0.9
30.9	3.85 .79	9.1 1.5	36.30 .63	57.4 1.6	46.59 .23	30.3 1.2
May 10.8	4.70 .89	7.9 1.0	36.97 .71	56.0 1.0	46.83 .26	31.7 1.4
20.8	5.62 .95	7.2 −0.4	37.72 .78	55.3 −0.5	47.11 .29	33.2 1.7
30.8	6.61 .99	7.1 +0.2	38.53 .82	55.1 +0.1	47.41 .31	35.0 1.8
June 9.8	7.61 1.00	7.6 0.8	39.36 .84	55.5 0.7	47.72 .32	36.9 2.0
19.7	8.61 .98	8.6 1.3	40.20 .83	56.4 1.2	48.05 .32	39.0 2.1
29.7	9.58 .93	10.2 1.8	41.02 .80	57.9 1.7	48.37 .32	41.1 2.1
July 9.7	10.48 .86	12.3 2.3	41.80 .75	59.9 2.2	48.68 .30	43.2 2.1
19.7	11.30 .77	14.9 2.7	42.52 .68	62.3 2.6	48.97 .28	45.3 2.0
29.6	12.03 .66	17.8 3.1	43.16 .60	65.1 3.0	49.24 .26	47.2 1.9
Aug. 8.6	12.63 .54	21.1 3.4	43.71 .50	68.3 3.3	49.49 .22	49.1 1.7
18.6	13.11 .41	24.6 3.6	44.17 .40	71.7 3.5	49.69 .19	50.7 1.6
28.5	13.46 .27	28.3 3.7	44.51 .29	75.3 3.7	49.86 .15	52.2 1.4
Sept. 7.5	13.66 +.13	32.1 3.8	44.75 .18	79.1 3.8	49.99 .11	53.5 1.1
17.5	13.71 −.01	35.9 3.8	44.87 +.06	82.8 3.8	50.08 .07	54.5 0.9
27.5	13.63 .15	39.7 3.7	44.87 −.05	86.6 3.7	50.14 +.04	55.2 0.7
Oct. 7.4	13.40 .29	43.4 3.5	44.76 .17	90.2 3.5	50.16 .00	55.8 0.4
17.4	13.05 .42	46.8 3.3	44.54 .27	93.7 3.3	50.15 −.02	56 1 +0.2
27.4	12.56 .54	50.0 3.0	44.22 .37	96.9 3.0	50.12 .05	56.3 0.0
Nov. 6.4	11.96 .65	52.8 2.6	43.80 .46	99.7 2.6	50.06 .07	56.2 −0.1
16.3	11.27 .74	55.1 2.1	43.30 .54	102.1 2.2	49.98 .08	56.0 0.3
26.3	10.49 .81	57.0 1.6	42.72 .60	104.1 1.7	49.89 .09	55.7 0.4
Dec. 6.3	9.65 .86	58.3 1.0	42.09 .65	105.5 1.1	49.80 .10	55.2 0.5
16.2	8.76 .89	59.0 +0.4	41.42 .69	106.3 +0.5	49.69 .10	54.6 0.6
26.2	7.87 .89	59.1 −0.2	40.73 .69	106.5 −0.1	49.50 .10	53.9 0.7
36.2	6.99 −.86	58.5 −0.8	40.04 −.68	106.1 −0.7	49.49 −.10	53.2 −0.7

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1873.	APPARENT RIGHT ASCENSION. Mean Noon.	APPARENT RIGHT ASCENSION. Apparent Noon.	APPARENT DECLINATION.* Mean Noon.	APPARENT DECLINATION.* Apparent Noon.	Hourly Motion, Mean Noon. Right Ascension.	Hourly Motion, Mean Noon. Declination.	Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Jan. 1	18 49 44.77	45.49	−22 57 51.4	50.6	11.034	+13.11	+ 4 5.15	16 18.37	1 11.04	18 45 39.70
2	18 54 9.41	10.22	22 52 23.0	22.0	11.019	14.25	4 33.23	18.37	11.00	18 49 36.26
3	18 58 33.66	34.56	22 46 27.3	26.1	11.002	15.38	5 0.93	18.36	10.95	18 53 32.82
4	19 2 57.50	58.48	22 40 4.5	3.1	10.984	16.51	5 28.21	18.36	10.90	18 57 29.38
5	19 7 20.88	21.94	22 33 14.7	13.1	10.965	17.63	5 55.04	18.35	10.84	19 1 25.93
6	19 11 43.77	44.91	22 25 58.2	56.3	10.944	18.74	6 21.38	18.33	10.78	19 5 22.49
7	19 16 6.16	7.38	22 18 15.2	13.1	10.922	19.83	6 47.21	18.31	10.71	19 9 19.05
8	19 20 28.01	29.30	22 10 6.0	3.7	10.899	20.92	7 12.51	18.28	10.64	19 13 15.61
9	19 24 49.31	50.68	22 1 30.8	28.2	10.875	22.00	7 37.26	18.24	10.56	19 17 12.17
10	19 29 10.02	11.45	21 52 29.7	26.7	10.850	23.07	8 1.42	18.19	10.48	19 21 8.73
11	19 33 30.13	31.63	21 43 3.2	0.0	10.825	24.13	8 24.97	18.14	10.40	19 25 5.28
12	19 37 49.62	51.18	21 33 11.4	7.9	10.799	25.18	8 47.91	18.09	10.32	19 29 1.83
13	19 42 8.47	10.10	21 22 54.7	50.8	10.772	26.21	9 10.21	18.03	10.23	19 32 58.40
14	19 46 26.68	28.37	21 12 13.4	9.1	10.745	27.23	9 31.85	17.96	10.14	19 36 54.96
15	19 50 44.22	45.97	21 1 7.8	3.2	10.717	28.24	9 52.84	17.88	10.05	19 40 51.51
16	19 55 1.08	2.89	20 49 38.1	33.2	10.688	29.23	10 13.15	17.80	9.95	19 44 47.07
17	19 59 17.25	19.11	20 37 44.6	39.3	10.659	30.21	10 32.76	17.71	9.86	19 48 44.63
18	20 3 32.71	34.62	20 25 27.8	22.2	10.629	31.18	10 51.66	17.62	9.76	19 52 41.19
19	20 7 47.45	49.41	20 12 47.9	42.0	10.599	32.14	11 9.84	17.53	9.66	19 56 37.74
20	20 12 1.47	3.48	19 59 45.1	38.8	10.568	33.08	11 27.30	17.43	9.55	20 0 34.30
21	20 16 14.75	16.80	19 46 20.0	13.4	10.537	34.01	11 44.02	17.32	9.44	20 4 30.86
22	20 20 27.27	29.36	19 32 32.7	25.8	10.505	34 92	11 59.99	17.21	9.33	20 8 27.42
23	20 24 39.01	41.14	19 18 23.7	16.5	10.473	35.82	12 15.18	17.09	9.22	20 12 23.97
24	20 28 50.01	52.17	19 3 53.3	45.8	10.441	36.70	12 29.60	16.97	9.11	20 16 20.53
25	20 33 0.21	2.41	18 48 61.9	54.0	10.408	37.57	12 43.24	16.85	9.00	20 20 17.09
26	20 37 9.62	11.85	18 33 49.9	41.7	10.375	38.42	12 56.09	16.72	8.89	20 24 13.64
27	20 41 18.23	20.49	18 18 17.7	9.2	10.341	39.25	13 8.13	16.59	8.77	20 28 10.20
28	20 45 26.01	28.29	18 2 25.7	16.9	10.307	40.07	13 19.35	16.46	8.66	20 32 6.76
29	20 49 32.98	35.28	17 46 14.2	5.1	10.273	40.87	13 29.75	16.33	8.55	20 36 3.32
30	20 53 39.12	41.44	17 29 43.8	34.4	10.238	41.65	13 39.33	16.19	8.43	20 39 59.88
31	20 57 44.43	46.77	17 12 54.7	45.0	10.203	42.42	13 48.08	16.05	8.32	20 43 56.43
Feb. 1	21 1 48.90	51.26	16 55 47.5	37.6	10.168	43.17	13 55.99	15.90	8.21	20 47 52.98
2	21 5 52.53	54.90	16 38 22.6	12.5	10.133	43.90	14 3.06	15.75	8.09	20 51 49.54
3	21 9 55.32	57.70	16 20 40.4	30.0	10.098	44.61	14 9.29	15.60	7.97	20 55 46.09
4	21 13 57.27	59.66	16 2 41.3	30.6	10.063	45.30	14 14.67	15.44	7.86	20 59 42.65
5	21 17 58.38	60.77	15 44 25.7	14.8	10.029	45.98	14 19.22	15.28	7.74	21 3 39.21
6	21 21 58.67	61.06	15 25 54.1	43.0	9.995	46 64	14 22.95	15.11	7.63	21 7 35.76
7	21 25 58.14	60.53	15 6 66.8	55.5	9.961	47.29	14 25.86	14.94	7.52	21 11 32.32
8	21 29 56.80	59.19	14 47 64.4	52.9	9.927	47.91	14 27.95	14.77	7.41	21 15 28.87
9	21 33 54.65	57.04	14 28 47.1	35.5	9.894	48.52	14 29.24	14.59	7.29	21 19 25.43
10	21 37 51.71	54.10	14 9 15.5	3.7	9.861	49.11	14 29.73	14.42	7.18	21 23 21.98
11	21 41 48.00	50.38	13 49 29.9	18.0	9.829	49.68	14 29.45	14.22	7.07	21 27 18.54
12	21 45 43.52	45.89	13 29 30.8	18.8	9.797	50.24	14 28.42	14.03	6.96	21 31 15.09
13	21 49 38.28	40.64	13 9 18.5	6.3	9.767	50.78	14 26.63	13.83	6.85	21 35 11.65
14	21 53 32.31	34 66	12 48 53.4	41.1	9.737	51.30	14 24.09	13.63	6.74	21 39 8.20
15	21 57 25.61	27.94	12 28 15.9	3.5	9.707	51.81	14 20.83	13.42	6.64	21 43 4.76
16	22 1 18.21	20.52	12 7 26.4	14.0	9.678	52.30	14 16.86	13.21	6.54	21 47 1.31
17	22 5 10.11	12.40	11 46 25.3	12.8	9.649	52.78	14 12.20	12.99	6.44	21 50 57.87
18	22 9 1.34	3.61	11 25 13.0	0.5	9.621	53.24	14 6.86	12.77	6.34	21 54 54.42
19	22 12 51.91	54.16	11 3 49.9	37.4	9.594	53.68	14 0.86	12.55	6.24	21 58 50.98
20	22 16 41.83	44.06	10 42 16.4	3.9	9.567	54.10	13 54.22	12.32	6.14	22 2 47.53
21	22 20 31.12	33.33	10 20 32.8	20.3	9.541	54.51	13 46.96	12.09	6.05	22 6 44.09
22	22 24 19.79	21.97	9 58 39.7	27.2	9.515	54.90	13 39.08	11.86	5.96	22 10 40.64
23	22 28 7.86	10.00	9 36 37.3	24.9	9.490	55.28	13 30.58	11.62	5.87	22 14 37.19
24	22 31 55.32	57.43	9 14 26.2	13.9	9.466	55.64	13 21.48	11.39	5.78	22 18 33.75
25	22 35 42.20	44.28	8 51 66.6	54.3	9.442	55.98	13 11.81	11.15	5.69	22 22 30.30
26	22 39 28.52	30.57	8 29 39.1	26.8	9.419	56.30	13 1.57	10.91	5.61	22 26 26.86
27	22 43 14.29	16.31	8 6 64.2	52.0	9.396	56.60	12 50.79	10.67	5.53	22 30 23.41
28	22 46 59.53	61.51	7 44 22.2	10.1	9.374	56.89	12 39.46	10.43	5.46	22 34 19.96
29	22 50 44.24	46.18	7 21 33.5	21.6	9.352	57.16	12 27.62	10.19	5 39	22 38 16.52
30	22 54 28.43	30.34	6 58 38.5	26.7	9.331	57.41	12 15.27	9.95	5.32	22 42 13.07
31	22 58 12.13	14.01	−6 35 37.8	26.2	9.311	+57.64	+12 2.41	16 9.70	1 5.25	22 46 9.62

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.19 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1873.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon,	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Nov. 1	14 27 54.88	52.22	−14 37 43.9	30.9	9.816	−47.77	−16 17.71	16 10.04	1 7.01	14 44 12.60
2	14 31 50.84	48.17	14 56 43.3	30.4	9.849	47.17	16 18.31	10.28	7.13	14 48 9.16
3	14 35 47.60	44.92	15 15 28.1	15.4	9.883	46.55	16 18.11	10.53	7.25	14 52 5.71
4	14 39 45.18	42.49	15 33 57.8	45.2	9.917	45.92	16 17.10	10.77	7.37	14 56 2.27
5	14 43 43.59	40.90	15 51 62.1	59.7	9.951	45.27	16 15.26	11.01	7.49	14 59 58.83
6	14 47 42.84	40.14	16 9 70.5	58.3	9.986	44.60	16 12.57	11.25	7.61	15 3 55.38
7	14 51 42.93	40.23	16 27 52.8	40.9	10.021	43.91	16 9.05	11.48	7.73	15 7 51.94
8	14 55 43.86	41.16	16 45 18.5	6.8	10.057	43.21	16 4.69	11.71	7.85	15 11 48.50
9	14 59 45.65	42.96	17 2 27.2	15.8	10.093	42.50	15 59.47	11.93	7.97	15 15 45.05
10	15 3 48.31	45.62	17 19 18.5	7.4	10.129	41.77	15 53.37	12.15	8.09	15 19 41.61
11	15 7 51.84	49.16	17 35 52.1	41.2	10.165	41.02	15 46.41	12.36	8.21	15 23 38.16
12	15 11 56.23	53.56	17 51 67.5	56.9	10.201	40.25	15 38.58	12.57	8.32	15 27 34.72
13	15 15 61.49	58.84	18 7 64.4	54.1	10.237	39.47	15 29.88	12.78	8.44	15 31 31.28
14	15 20 7.62	4.98	18 23 42.3	32.3	10.273	38.68	15 20.32	12.99	8.56	15 35 27.83
15	15 24 14.61	11.99	18 38 60.9	51.3	10.309	37.86	15 9.90	13.20	8.68	15 39 24.39
16	15 28 22.45	19.85	18 53 59.7	50.5	10.344	37.03	14 58.62	13.40	8.79	15 43 20.95
17	15 32 31.14	28.57	19 8 38.3	29.4	10.379	36.18	14 46.49	13.60	8.90	15 47 17.50
18	15 36 40.68	38.14	19 22 56.3	47.7	10.414	35.31	14 33.53	13.80	9.01	15 51 14.06
19	15 40 51.04	48.54	19 36 53.4	45.1	10.448	34.44	14 19.73	13.99	9.12	15 55 10.62
20	15 44 62.22	59.76	19 50 29.1	21.2	10.482	33.55	14 5.11	14.18	9.24	15 59 7.18
21	15 49 14.20	11.77	20 3 43.0	35.4	10.515	32.63	13 49.69	14.37	9.35	16 3 3.74
22	15 53 26.98	24.59	20 16 34.8	27.5	10.548	31.69	13 33.48	14.56	9.46	16 7 0.29
23	15 57 40.53	38.18	20 28 64.1	57.2	10.580	30.75	13 16.49	14.75	9.57	16 10 56.85
24	16 1 54.84	52.53	20 41 10.6	4.1	10.611	29.79	12 58.73	14.93	9.68	16 14 53.40
25	16 6 9.89	7.63	20 52 53.8	47.7	10.641	28.81	12 40.23	15.11	9.78	16 18 49.96
26	16 10 25.66	23.45	21 4 13.6	7.8	10.671	27.82	12 21.03	15.29	9.88	16 22 46.52
27	16 14 42.13	39.97	21 15 9.5	4.0	10.700	26.82	12 1.13	15.46	9.98	16 26 43.08
28	16 18 59.30	57.20	21 25 41.2	36.0	10.729	25.81	11 40.52	15.62	10.08	16 30 39.64
29	16 23 17.14	15.09	21 35 48.4	43.6	10.757	24.79	11 19.23	15.78	10.17	16 34 36.19
30	16 27 35.63	33.64	21 45 30.8	26.4	10.784	23.75	10 57.30	15.94	10.26	16 38 32.75
Dec. 1	16 31 54.75	52.82	21 54 48.2	44.1	10.810	22.70	10 34.74	16.19	10.35	16 42 29.31
2	16 36 14.50	12.63	22 3 40.4	36.7	10.836	21.64	10 11.56	16.25	10.43	16 46 25.87
3	16 40 34.84	33.94	22 12 7.1	3.7	10.860	20.57	9 47.77	16.39	10.51	16 50 22.43
4	16 44 55.76	54.03	22 20 7.9	4.8	10.884	19.49	9 23.39	16.53	10.59	16 54 18.99
5	16 49 17.25	15.59	22 27 42.7	39.9	10.906	18.40	8 58.45	16.66	10.66	16 58 15.54
6	16 53 39.27	37.68	22 34 51.3	48.8	10.928	17.31	8 32.99	16.79	10.73	17 2 12.10
7	16 58 1.80	0.30	22 41 33.4	31.2	10.949	16.20	8 7.01	16.90	10.80	17 6 8.66
8	17 2 24.82	23.40	22 47 48.9	46.9	10.969	15.08	7 40.55	17.01	10.86	17 10 5.22
9	17 6 48.31	46.97	22 53 37.5	35.7	10.988	13.96	7 13.62	17.12	10.92	17 14 1.78
10	17 11 12.24	10.98	22 58 59.0	57.4	11.006	12.83	6 46.25	17.23	10.98	17 17 58.34
11	17 15 36.58	35.41	23 3 53.3	52.0	11.022	11.69	6 18.46	17.33	11.03	17 21 54.89
12	17 20 1.31	0.22	23 8 20.2	19.1	11.038	10.54	5 50.28	17.42	11.08	17 25 51.45
13	17 24 26.39	25.38	23 12 19.5	18.6	11.051	9.39	5 21.74	17.51	11.12	17 29 48.01
14	17 28 51.79	50.86	23 15 51.2	50.5	11.064	8.23	4 52.89	17.59	11.16	17 33 44.57
15	17 33 17.47	16.63	23 18 55.0	54.5	11.075	7.07	4 23.76	17.67	11.19	17 37 41.13
16	17 37 43.40	42.65	23 21 30.8	30.4	11.084	5.90	3 54.38	17.74	11.22	17 41 37.69
17	17 42 9.54	8.88	23 23 38.6	38.3	11.092	4.73	3 24.79	17.81	11.24	17 45 34.25
18	17 46 35.86	35.29	23 25 18.2	18.0	11.099	3.56	2 55.03	17.88	11.26	17 49 30.81
19	17 51 2.31	1.84	23 26 29.5	29.3	11.104	2.38	2 25.13	17.95	11.27	17 53 27.36
20	17 55 28.86	28.48	23 27 12.4	12.3	11.107	1.20	1 55.12	18.01	11.28	17 57 23.92
21	17 59 55.47	55.18	23 27 27.0	27.0	11.109	− 0.02	1 25.06	18.07	11.29	18 1 20.48
22	18 4 22.10	21.90	23 27 13.3	13.3	11.109	+ 1.16	0 54.98	18.13	11.30	18 5 17.04
23	18 8 48.71	48.60	23 26 31.3	31.3	11.107	2.34	− 0 24.92	18.18	11.30	18 9 13.60
24	18 13 15.26	15.24	23 25 21.0	21.0	11.104	3.52	+ 0 5.08	18.23	11.29	18 13 10.16
25	18 17 41.72	41.80	23 23 42.4	42.3	11.099	4.70	0 34.99	18.27	11.28	18 17 6.72
26	18 22 8.05	8.22	23 21 35.5	35.4	11.093	5.87	1 4.78	18.31	11.27	18 21 3.28
27	18 26 34.22	34.48	23 19 0.5	0.4	11.086	7.04	1 34.41	18.34	11.24	18 24 59.83
28	18 31 0.19	0.54	23 15 57.4	57.1	11.077	8.21	2 3.83	18.36	11.21	18 28 56.39
29	18 35 25.93	26.37	23 12 26.3	25.9	11.067	9.37	2 33.01	18.38	11.18	18 32 52.95
30	18 39 51.41	51.94	23 8 27.4	26.9	11.056	10.53	3 1.94	18.40	11.15	18 36 49.51
31	18 44 16.60	17.22	23 4 0.7	0.1	11.044	11.68	3 30.57	18.40	11.11	18 40 46.07
32	18 48 41.48	42.19	−22 59 6.5	5.7	11.030	+12.83	+ 3 58.90	16 18.40	1 11.06	18 44 42.63

Note.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0s.19 from the Sidereal Interval.

WASHINGTON MERIDIAN.

Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Jan. 1	2 39.30	2.475	73.88	154 .. 157	I.	Mar. 1	2 35.16	2.073	67.91		I.
2	3 36.29	2.278	71.01	161 .. 164	I.	2	3 24.68	2.061	67.79	10 .. 13	I.
3	4 28.81	2.108	68.46	168 .. 171	I.	3	4 14.36	2.084	68.23	16 .. 19	I
4	5 17 87	1.991	66.67	174 .. 3	I.	4	5 4.84	2.125	68.91	21 .. 24	I.
5	6 4.81	1.931	65.69	5 .. 8	I.	5	5 56.32	2.163	69.52	28 .. 31	I.
6	6 50.95	1.923	65.55	10 .. 13	I.	6	6 48.47	2.177	69.73	33 .. 36	I.
7	7 37.44	1.958	66.09	13 .. 16	I.	7	7 40.53	2.153	69.33	38 .. 41	I.
8	8 25.16	2.022	67.05	20 .. 23	I.	8	8 31.55	2.092	68.30	46 .. 49	I.
9	9 14.54	2.092	68.09	26 .. 29	I.	9	9 20.72	2.003	66.82	55 .. 58	I.
10	10 5.46	2.146	68.87	31 .. 34	I.	10	10 7.59	1.903	65.15	62 .. 65	I.
11	10 57.26	2.162	69.05	36 .. 39	I.	11	10 52.13	1.812	63.59	69 .. 72	I.
12	11 48.84	2.127	68.50	42 .. 45	I.	12	11 34.70	1.740	62.37	75 .. 78	I.
13	12 39.04	2.050	67.28	50 .. 53	II.	13	12 15.91	1.700	61.67	83 .. 86	II.
14	13 27.03	1.948	65.68	60 .. 63	II.	14	12 56.59	1.696	61.60	86 .. 89	II.
15	14 12.51	1.844	64.05	67 .. 70	II.	15	13 37.61	1.730	62.24	95 .. 98	II.
16	14 55.68	1.758	62.69	72 .. 75	II.	16	14 19.98	1.808	63.60	102 .. 105	II.
17	15 37.12	1.702	61.82	82 .. 85	II.	17	15 4.72	1.928	65.63	108 .. 111	II.
18	16 17.70	1.686	61.61	85 .. 88	II.	18	15 52.78	2.083	68.17	112 .. 115	II.
19	16 58.41	1.715	62.15	93 .. 96	II.	19	16 44.84	2.259	70.94	121 .. 124	II.
20	17 40.43	1.795	63.53	101 .. 104	II.	20	17 41.08	2.422	73.42	128 .. 131	II.
21	18 25.00	1.929	65.72	108 .. 111	II.	21	18 40.63	2.528	75.00	135 .. 138	II.
22	19 13.41	2.115	68.64	111 .. 114	II.	22	19 41.77	2.550	75.27	144 .. 147	II.
23	20 6.76	2.336	71.98	119 .. 122	II.	23	20 42.38	2.488	74.30	151 .. 154	II.
24	21 5.49	2.553	75.10		II.	24	21 40.78	2.375	72.58		II.
25	22 8.76	2.700	77.16		II.	25	22 36.30	2.255	70.70		II.
26	23 14.18	2.725	77.45		II.	26	23 29.20	2.160	69.21		II.
28	0 18.62	2.625	76.00		I.	28	0 20.30	2.107	68.39		I.
29	1 19.61	2.451	73.50		I.	29	1 10.67	2.098	68.26		I.
30	2 16.19	2.269	70.82		I.	30	2 1.27	2.124	68.74		I.
31	3 8.75	2.121	68.64	172 .. 1	I.	31	2 52.80	2.172	69.55	19 .. 22	I.
Feb. 1	3 58.39	2.026	67.20	3 .. 6	I.	Apr. 1	3 45.51	2.218	70.33	26 .. 29	I.
2	4 46.41	1.984	66.61	8 .. 11	I.	2	4 39.07	2.238	70.73	31 .. 34	I.
3	5 34.00	1.989	66.70	12 .. 15	I.	3	5 32.63	2.217	70.40	36 .. 39	I.
4	6 22.14	2.028	67.30	18 .. 21	I.	4	6 25.13	2.151	69.41	41 .. 44	I.
5	7 11.45	2.082	68.15	24 .. 27	I.	5	7 15.62	2.053	67.84	52 .. 55	I.
6	8 2.02	2.130	68.85	30 .. 33	I.	6	8 3.59	1.943	66.03	61 .. 64	I.
7	8 53.47	2.150	69.09	35 .. 38	I.	7	8 48.92	1.839	64.30	67 .. 70	I.
8	9 44.92	2.129	68.69	40 .. 43	I.	8	9 32.06	1.760	62.89	73 .. 76	I.
9	10 35.34	2.066	67.64	48 .. 51	I.	9	10 13.65	1.712	62.01	81 .. 84	I.
10	11 23.88	1.976	66.15	59 .. 62	II.	10	10 54.50	1.700	61.75	85 .. 88	I.
11	12 10.09	1.876	64.52	65 .. 68	II.	11	11 35.55	1.728	62.21	93 .. 96	I.
12	12 53.98	1.785	63.04	71 .. 74	II.	12	12 17.77	1.798	63.38	101 .. 104	II.
13	13 35.97	1.719	61.96	79 .. 82	II.	13	13 2.19	1.910	65.24	107 .. 110	II.
14	14 16.75	1.685	61.44	83 .. 86	II.	14	13 49.73	2.057	67.64	110 .. 113	II.
15	14 57.18	1.691	61.62	91 .. 94	II.	15	14 41.09	2.224	70.29	117 .. 120	II.
16	15 38.27	1.741	62.53	97 .. 100	II.	16	15 36.37	2.378	72.72	125 .. 128	II.
17	16 21.11	1.838	64.22	105 .. 108	II.	17	16 34.86	2.482	74.30	132 .. 135	II.
18	17 6.86	1.983	66.62	109 .. 112	II.	18	17 34.90	2.505	74.67	141 .. 144	II.
19	17 56.60	2.169	69.55	113 .. 116	II.	19	18 34.48	2.447	73.81	149 .. 152	II.
20	18 51.07	2.372	72.63	123 .. 126	II.	20	19 31.94	2.337	72.16	155 .. 158	II.
21	19 50.22	2.546	75.19	130 .. 133	II.	21	20 26.56	2.218	70.30	161 . 164	II.
22	20 52.77	2.643	76.52	139 .. 142	II.	22	21 18.56	2 122	68.76	168 .. 171	II.
23	21 56.36	2.633	76.26		II.	23	22 8.74	2.068	67.87		II.
24	22 58.42	2.527	74.66		II.	24	22 58.18	2.060	67.69		II.
25	23 57.29	2.377	72.43		II.	25	23 47.97	2.096	68.23		II.
27	0 52.56	2.235	70.31		I.	27	0 38.99	2.160	69.23		I.
28	1 44.83	2.130	68.74		I.	28	1 31.68	2.230	70.37		I.
29	2 35.16	2.073	67.91		I.	29	2 25.88	2.280	71.19		I.
30	3 24.68	2.061	67.79	10 .. 13	I.	30	3 20.75	2.283	71.32	34 .. 37	I.
31	4 14.36	2.084	68.23	16 .. 19	I.	31	4 15.03	2.230	70.65	39 .. 42	I.

WASHINGTON MERIDIAN.

Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
May 1	4 15.03	2.230	70.65	30 .. 42	I.	July 1	5 21.85	1.660	61.36	84 .. 87	I.
2	5 7.42	2.130	69.08	47 .. 50	I.	2	6 1.76	1.674	61.63	91 .. 94	I.
3	5 57.07	2.007	67.14	58 .. 61	I.	3	6 42.62	1.740	62.75	98 .. 101	I
4	6 43.74	1.885	65.17	65 .. 68	I.	4	7 25.70	1.859	64.71	106 .. 109	I.
5	7 27.73	1.786	63.50	70 .. 73	I.	5	8 12.23	2.028	67.38	110 .. 113	I.
6	8 9.73	1.720	62.34	78 .. 81	I.	6	9 3.34	2.237	70.55	115 .. 118	I.
7	8 50.60	1.693	61.82	83 .. 86	I.	7	9 59.60	2.449	73.67	124 .. 127	I.
8	9 31.34	1.710	62.05	91 .. 94	I.	8	11 0.48	2.609	75.96	130 .. 133	I.
9	10 13.03	1.773	63.04	97 .. 100	I.	9	12 4.03	2.662	76.69	139 .. 142	II.
10	10 56.78	1.880	64.79	106 .. 109	I.	10	13 7.35	2.593	75.70	148 .. 151	II.
11	11 43.61	2.030	67.18	109 .. 112	I.	11	14 7.87	2.441	73.54	154 .. 157	II.
12	12 34.42	2.207	69.95	113 .. 116	II.	12	15 4.36	2.269	71.01	162 .. 165	II.
13	13 29.51	2.380	72.60	123 .. 126	II.	13	15 56.95	2.123	68.84	168 .. 171	II.
14	14 28.27	2.504	74.49	130 .. 133	II.	14	16 46.64	2.028	67.39	1 .. 4	II.
15	15 29.04	2.540	75.08	138 .. 141	II.	15	17 34.73	1.990	66.80	6 .. 9	II.
16	16 29.50	2.482	74.27	146 .. 149	II.	16	18 22.55	2.004	67.03	10 .. 13	II.
17	17 27.66	2.357	72.46	153 .. 156	II.	17	19 11.23	2.059	67.88	14 .. 17	II.
18	18 22.53	2.216	70.36	157 .. 160	II.	18	20 1.55	2.136	69.05	20 .. 23	II.
19	19 14.20	2.097	68.47	166 .. 169	II.	19	20 53.75	2.210	70.12	28 .. 31	II.
20	20 3.51	2.022	67.23	173 .. 2	II.	20	21 47.38	2.250	70.67		II.
21	20 51.61	1.997	66.79	3 .. 6	II.	21	22 41.32	2.234	70.38		II.
22	21 39.74	2.022	67.14		II.	22	23 34.17	2.161	69.20		II.
23	22 28.98	2.088	68.12		II.	24	0 24.72	2.046	67.43		I.
24	23 20.10	2.175	69.46		II.	25	1 12.29	1.918	65.41		I.
26	0 13.31	2.256	70.68		I.	26	1 56.87	1.801	63.51		I.
27	1 8.10	2.299	71.38		I.	27	2 38.93	1.710	62.05	77 .. 80	I.
28	2 3.22	2.282	71.18		I.	28	3 19.25	1.656	61 19	83 .. 86	I.
29	2 57.17	2.203	70.03		I.	29	3 58.78	1.645	61.07	86 .. 89	I.
30	3 48.64	2.082	68.21	53 .. 56	I.	30	4 38.60	1.681	61.75	96 .. 99	I.
31	4 36.98	1.948	66.12	62 .. 65	I.	31	5 19.87	1.767	63.24	103 .. 106	I.
June 1	5 22.22	1.827	64.20	68 .. 71	I.	Aug. 1	6 3.81	1.904	65.53	108 .. 111	I.
2	6 4.90	1.737	62.70	74 .. 77	I.	2	6 51.60	2.087	68.41	112 .. 115	I.
3	6 45.89	1.686	61.82	83 .. 86	I.	3	7 44.21	2.300	71.65	121 .. 124	I.
4	7 26.20	1.681	61.70	85 .. 87	I.	4	8 41.88	2.500	74.75	128 .. 131	I.
5	8 6.95	1.724	62.39	95 .. 98	I.	5	9 43.67	2.631	76.41	135 .. 138	I.
6	8 49.34	1.817	63.90	103 .. 106	I.	6	10 47.33	2.650	76.62	144 .. 147	I.
7	9 34.56	1.960	66.17	107 .. 110	I.	7	11 50.05	2.560	75.27	151 .. 154	I.
8	10 23.74	2.145	69.03	111 .. 114	I.	8	12 49.72	2.409	73.07	157 .. 160	II.
9	11 17.64	2.347	72.07	120 .. 123	I.	9	13 45.62	2.255	70.81	166 .. 169	II.
10	12 16.15	2.519	74.60	127 .. 130	II.	10	14 38.19	2.136	69.02	172 .. 1	II.
11	13 17.91	2.607	75.90	135 .. 138	II.	11	15 28.52	2.068	68.04	4 .. 7	II.
12	14 20.45	2.582	75.63	143 .. 146	II.	12	16 17.88	2.054	67.87	9 .. 12	II
13	15 21.12	2.461	73.88	151 .. 154	II.	13	17 7.45	2.084	68.38	12 .. 15	II.
14	16 18.24	2.298	71.52	156 .. 159	II.	14	17 58.10	2.140	69.27	19 .. 22	II.
15	17 11.48	2.145	69.22	164 .. 167	II.	15	18 50.22	2.201	70.23	26 .. 29	II.
16	18 1.50	2.033	67.47	171 .. 174	II.	16	19 43.60	2.239	70.73	31 .. 34	II.
17	18 49.48	1.975	66.55	3 .. 6	II.	17	20 37.37	2.231	70.56	36 .. 39	II.
18	19 36.74	1.973	66.48	7 .. 10	II.	18	21 30.32	2.171	69.55	42 .. 45	II.
19	20 24.54	2.018	67.14	11 .. 14	II.	19	22 21.28	2.069	67.90		II.
20	21 13.87	2.097	68.34	17 .. 20	II.	20	23 9.49	1.947	65.92		II.
21	22 5.30	2.188	69.69		II.	21	23 54.78	1.830	63.98		II.
22	22 58.75	2.259	70.73		II.	23	0 37.49	1.734	62.37		I.
23	23 53.36	2.281	71.05		II.	24	1 18.23	1.668	61.29		I.
25	0 47.73	2.238	70.40		I.	25	1 57.84	1.640	60.86		I.
26	1 40.33	2.138	68.91		I.	26	2 37.29	1.654	61.16	93 .. 96	I.
27	2 30.10	2.008	66.91		I.	27	3 17.60	1.712	62.23	101 .. 104	I.
28	3 16.67	1.876	64.85	66 .. 69	I.	28	3 59.85	1.817	64.06	107 .. 110	I.
29	4 0.31	1.766	63.09	71 .. 74	I.	29	4 45.15	1.966	66.53	110 .. 113	I.
30	4 41.72	1.692	61.88	80 .. 83	I.	30	5 34.48	2.150	69.48	116 .. 119	I.
31	5 21.85	1.660	61.36	84 .. 87	I.	31	6 28.41	2.344	72.43	124 .. 127	I.

WASHINGTON MERIDIAN.

Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s		
Sept. 1	7 26.70	2.504	74.78	130 . . 133	I.
2	8 27.99	2.585	75.90	140 . . 143	I.
3	9 30.05	2.567	75.57	148 . . 151	I.
4	10 30.63	2.471	74.13	155 . . 158	I.
5	11 28.41	2.344	72.17	162 . . 165	I.
6	12 23.20	2.229	70.43	168 . . 171	II.
7	13 15.68	2.154	69.33	1 . . 4	II.
8	14 6.96	2.128	68.97	6 . . 9	II.
9	14 58.15	2.145	69.31	11 . . 14	II.
10	15 50.16	2.193	70.11	16 . . 19	II.
11	16 43.44	2.246	70.98	23 . . 26	II.
12	17 37.83	2.280	71.50	30 . . 33	II.
13	18 32.55	2.270	71.37	34 . . 37	II.
14	19 26.39	2.208	70.37	40 . . 43	II.
15	20 18.21	2.104	68.70	48 . . 51	II.
16	21 7.23	1.980	66.65	59 . . 62	II.
17	21 53.25	1.858	64.59	67 . . 70	II.
18	22 36.55	1.755	62.83		II.
19	23 17.74	1.683	61.58		II.
20	23 57.63	1.647	60.95		II.
22	0 37.12	1.650	61.00		I.
23	1 17.15	1.693	61.78		I.
24	1 58.71	1.778	63.30		I.
25	2 42.80	1.903	65.42	108 . . 111	I.
26	3 30.29	2.060	68.01	113 . . 116	I.
27	4 21.75	2.229	70.71	123 . . 126	I.
28	5 17.15	2.381	73.04	129 . . 132	I.
29	6 15.59	2.476	74.48	136 . . 139	I.
30	7 15.38	2.491	74.67	144 . . 147	I.
Oct 1	8 14.61	2.433	73.75	151 . . 154	I.
2	9 11.87	2.336	72.23	157 . . 160	I.
3	10 6.73	2.240	70.70	164 . . 167	I.
4	10 59.59	2.173	69.62	172 . . 1	I.
5	11 51.37	2.151	69.29	4 . . 7	I.
6	12 43.18	2.175	69.67	10 . . 13	II.
7	13 36.00	2.232	70.60	13 . . 16	II.
8	14 30.39	2.301	71.72	20 . . 23	II.
9	15 26.29	2.351	72.55	27 . . 30	II.
10	16 22.86	2.352	72.64	33 . . 36	II.
11	17 18.74	2.293	71.78	38 . . 41	II.
12	18 12.51	2.181	70.04	46 . . 49	II.
13	19 3.20	2.041	67.85	57 . . 60	II.
14	19 50.50	1.903	65.57	63 . . 66	II.
15	20 34.70	1.785	63.56	69 . . 72	II.
16	21 16.45	1.701	62.06	78 . . 81	II.
17	21 56.64	1.655	61.22	83 . . 86	II.
18	22 36.19	1.649	61.05		II.
19	23 16.11	1.685	61.61		II.
20	23 57.38	1.762	62.93		II.
22	0 40.98	1.878	64.80		I.
23	1 27.77	2.026	67.32		I.
24	2 18.30	2.185	69.85		I.
25	3 12.54	2.329	72.15	127 . . 130	I.
26	4 9.68	2.420	73.59	134 . . 137	I.
27	5 8.11	2.435	73.86	142 . . 145	I.
28	6 6.03	2.380	73.06	149 . . 152	I.
29	7 2.05	2.285	71.60	155 . . 158	I.
30	7 55.68	2.188	70.07	162 . . 165	I.
31	8 47.27	2.119	68.93	168 . . 171	I.
Nov. 1	9 37.73	2.095	68.50	1 . . 4	I.
Nov. 1	9 37.73	2.095	68.50	1 . . 4	I.
2	10 28.20	2.120	68.85	6 . . 9	I.
3	11 19.84	2.190	69.90	11 . . 14	I
4	12 13.53	2.286	71.38	17 . . 20	II.
5	13 9.53	2.376	72.76	23 . . 26	II.
6	14 7.25	2.422	73.52	30 . . 33	II.
7	15 5.25	2.396	73.20	35 . . 38	II.
8	16 1.68	2.295	71.74	41 . . 44	II.
9	16 55.04	2.146	69.49	51 . . 54	II.
10	17 44.59	1.985	66.98	60 . . 63	II.
11	18 30.45	1.841	64.63	67 . . 70	II.
12	19 13.24	1.732	62.76	72 . . 75	II.
13	19 53.92	1.665	61.57	81 . . 84	II.
14	20 33.51	1.642	61.12	85 . . 88	II.
15	21 13.12	1.666	61.45	92 . . 95	II.
16	21 53.83	1.735	62.57		II.
17	22 36.73	1.848	64.41		II.
18	23 22.81	1.998	66.81		II.
20	0 12.79	2.169	69.50		I.
21	1 6.81	2.328	71.95		I.
22	2 4.14	2.435	73.62		I.
23	3 3.08	2.459	74.05	140 . . 143	I.
24	4 1.55	2.399	73.22	148 . . 151	I.
25	4 57.84	2.287	71.59	153 . . 156	I.
26	5 51.24	2.166	69.75	158 . . 161	I.
27	6 41.99	2.071	68.26	166 . . 169	I.
28	7 30.99	2.022	67.46	173 . . 2	I.
29	8 19.48	2.028	67.50	4 . . 7	I.
30	9 8.75	2.087	68.35	9 . . 12	I.
Dec. 1	9 59.96	2.187	69.85	13 . . 16	I.
2	10 53.87	2.306	71.63	19 . . 22	I.
3	11 50.47	2.403	73.08	27 . . 30	I.
4	12 48.75	2.438	73.62	34 . . 37	II.
5	13 46.84	2.386	72.89	39 . . 42	II.
6	14 42.73	2.260	71.05	45 . . 48	II.
7	15 35.00	2.094	68.56	59 . . 62	II.
8	16 23.21	1.928	65.96	65 . . 68	II.
9	17 7.73	1.789	63.72	70 . . 73	II.
10	17 49.41	1.692	62.10	78 . . 81	II.
11	18 29.33	1.642	61.24	83 . . 86	II.
12	19 8.62	1.640	61.16	89 . . 92	II.
13	19 48.46	1.688	61.95	97 . . 100	II.
14	20 30.05	1.786	63.54	104 . . 107	II.
15	21 14.56	1.931	65.84	109 . . 112	II.
16	22 3.00	2.111	68.66		II.
17	22 55.94	2.300	71.52		II.
18	23 53.12	2.454	73.81		II.
20	0 53.10	2.525	74.86		I.
21	1 53.54	2.492	74.42		I.
22	2 52.13	2.380	72.82		I.
23	3 47.51	2.235	70.69	156 . . 159	I.
24	4 39.51	2.105	68.74	165 . . 168	I.
25	5 28.87	2.018	67.40	171 . . 174	I.
26	6 16.80	1.986	66.90	2 . . 5	I.
27	7 4.65	2.011	67.29	7 . . 10	I.
28	7 53.74	2.087	68.43	12 . . 15	I.
29	8 45.10	2.197	70.08	17 . . 20	I.
30	9 39.23	2.311	71.76	24 . . 27	I.
31	10 35.76	2.391	72.88	30 . . 33	I.
32	11 33.38	2.397	72.84	34 . . 37	I.

MEAN PLACES FOR 1873.0.

No.	Name.	Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
			h	m	s	s	°	′	″	″
1	*d* Piscium	6.5	0	14	3.87	+3.086	+ 7	29	6.1	+20.06
2	44 Piscium	6	0	18	53.63	3.075	+ 1	14	11.6	19.99
3	10 Ceti	6	0	20	6.60	3.077	− 0	45	12.0	19.98
4	δ Piscium	4.5	0	42	5.67	3.108	+ 6	53	37.3	19.71
5	ε PISCIUM	4	0	56	21.20	3.110	7	12	21.5	19.48
6	ζ^1 Piscium	5.4	1	7	5.83	+3.131	+ 6	54	11.7	+19.14
7	μ Piscium	5	1	23	31.90	3.139	5	29	14.0	18.56
8	η PISCIUM	4.3	1	24	41.32	3.200	14	41	26.4	18.72
9	ν Piscium	5.4	1	34	49.40	3.119	4	50	36.9	18.34
10	ο PISCIUM	4	1	38	41.40	3.162	8	31	3.9	18.26
11	ξ^1 CETI	4.5	2	6	16.17	+3.169	+ 8	14	59.6	+17.08
12	ξ^2 Ceti	4	2	21	24.55	3.184	7	53	23.0	16.36
13	μ Ceti	4	2	38	4.73	3.234	9	34	35.0	15.42
14	π Arietis	6.5	2	42	12.47	3.338	16	56	6.9	15.28
15	ε Arietis	4.5	2	51	57.25	3.422	20	49	51.5	14.67
16	λ Ceti	6.5	2	52	54.96	+3.215	+ 8	24	2.0	+14.63
17	δ Arietis	4.5	3	4	22.21	3.421	19	14	41.3	13.92
18	ζ ARIETIS	4.5	3	7	36.27	3.437	20	34	20.9	13.65
19	*f* Tauri	4	3	23	51.94	3.307	12	29	58.1	12.63
20	η TAURI	3	3	39	56.25	3.554	23	42	38.0	11.46
21	*e* Tauri	5	3	41	18.43	+3.281	+10	45	1.6	+11.36
22	λ Tauri	3.4	3	53	38.76	3.317	12	7	47.1	10.52
23	A^1 Tauri	5.4	3	57	11.34	3.537	21	43	57.9	10.18
24	γ TAURI	4	4	12	34.05	3.407	15	19	9.0	9.06
25	υ^1 Tauri	5.4	4	18	42.63	3.582	22	31	25.0	8.55
26	ε TAURI	4.3	4	21	12.14	+3.496	+18	53	49.0	+ 8.37
27	α TAURI	1	4	28	38.10	3.436	16	15	7.7	7.62
28	τ Tauri	4.5	4	34	37.48	3.594	22	42	40.8	7.30
29	ι Tauri	5	4	55	30.40	3.583	21	24	22.7	5.54
30	11 ORIONIS	5	4	57	18.85	3.425	15	13	31.0	5.41
31	ο Tauri	6	5	20	0.47	+3.603	+21	49	34.7	+ 3.51
32	119 Tauri	6.5	5	24	46.19	3.517	18	29	51.1	3.08
33	ζ Tauri	3.4	5	30	3.43	3.586	21	3	46.6	2.59
34	χ^1 Orionis	5.4	5	46	51.73	3.552	20	15	0.8	+ 1.05
35	ν Orionis	5.4	6	0	19.33	3.428	14	46	52.7	− 0.05
36	η Geminorum	3.4	6	7	12.71	+3.624	+22	32	28.4	− 0.64
37	μ GEMINORUM	3	6	15	16.66	3.633	22	34	35.7	1.44
38	γ GEMINORUM	2.3	6	30	22.52	3.469	16	30	20.4	2.68
39	ξ Geminorum	4.3	6	38	9.82	3.373	13	1	49.0	3.49
40	ζ Geminorum	4	6	56	34.61	3.565	20	45	16.1	4.92
41	λ Geminorum	4.3	7	10	47.74	+3.456	+16	46	3.3	− 6.10
42	δ GEMINORUM	3.4	7	12	32.25	3.591	22	12	51.0	6.23
43	63 Geminorum	6.5	7	20	12.08	3.570	21	42	11.7	6.95
44	6 Canis Minoris	6.5	7	22	43.79	+3.346	+12	16	4.2	− 7.08

WASHINGTON MERIDIAN.

Date. 1878.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1878.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Jan. 1	2 39.30	2.475	73.88	154 .. 157	I.	Mar. 1	2 35.16	2.073	67.91		I.
2	3 36.29	2.278	71.01	161 .. 164	I.	2	3 24.68	2.061	67.79	10 .. 13	I.
3	4 28.81	2.108	68.46	168 .. 171	I.	3	4 14.36	2.084	68.23	16 .. 19	I
4	5 17.87	1.991	66.67	174 .. 3	I.	4	5 4.84	2.125	68.91	21 .. 24	I.
5	6 4.81	1.931	65.69	5 .. 8	I.	5	5 56.32	2.163	69.52	28 .. 31	I.
6	6 50.95	1.923	65.55	10 .. 13	I.	6	6 48.47	2.177	69.73	33 .. 36	I.
7	7 37.44	1.958	66.09	13 .. 16	I.	7	7 40.53	2.153	69.33	38 .. 41	I.
8	8 25.16	2.022	67.05	20 .. 23	I.	8	8 31.55	2.092	68.30	46 .. 49	I.
9	9 14.54	2.092	68.09	26 .. 29	I.	9	9 20.72	2.003	66.82	55 .. 58	I.
10	10 5.46	2.146	68.87	31 .. 34	I.	10	10 7.59	1.903	65.15	62 .. 65	I.
11	10 57.26	2.162	69.05	36 .. 39	I.	11	10 52.13	1.812	63.59	69 .. 72	I.
12	11 48.84	2.127	68.50	42 .. 45	I.	12	11 34.70	1.740	62.37	75 .. 78	I.
13	12 39.04	2.050	67.28	50 .. 53	II.	13	12 15.91	1.700	61.67	83 .. 86	II.
14	13 27.03	1.948	65.68	60 .. 63	II.	14	12 56.59	1.696	61.60	86 .. 89	II.
15	14 12.51	1.844	64.05	67 .. 70	II.	15	13 37.61	1.730	62.24	95 .. 98	II.
16	14 55.68	1.758	62.69	72 .. 75	II.	16	14 19.98	1.808	63.60	102 .. 105	II.
17	15 37.12	1.702	61.82	82 .. 85	II.	17	15 4.72	1.928	65.63	108 .. 111	II.
18	16 17.70	1.686	61.61	85 .. 88	II.	18	15 52.78	2.083	68.17	112 .. 115	II.
19	16 58.41	1.715	62.15	93 .. 96	II.	19	16 44.84	2.259	70.94	121 .. 124	II.
20	17 40.43	1.795	63.53	101 .. 104	II.	20	17 41.08	2.422	73.42	128 .. 131	II.
21	18 25.00	1.929	65.72	108 .. 111	II.	21	18 40.63	2.528	75.00	135 .. 138	II.
22	19 13.41	2.115	68.64	111 .. 114	II.	22	19 41.77	2.550	75.27	144 .. 147	II.
23	20 6.76	2.336	71.98	119 .. 122	II.	23	20 42.38	2.488	74.30	151 .. 154	II.
24	21 5.49	2.553	75.10		II.	24	21 40.78	2.375	72.58		II.
25	22 8.76	2.700	77.16		II.	25	22 36.30	2.255	70.70		II.
26	23 14.18	2.725	77.45		II.	26	23 29.20	2.160	69.21		II.
28	0 18.62	2.625	76.00		I.	28	0 20.30	2.107	68.39		I.
29	1 19.61	2.451	73.50		I.	29	1 10.67	2.098	68.26		I.
30	2 16.19	2.269	70.82		I.	30	2 1.27	2.124	68.74		I.
31	3 8.75	2.121	68.64	172 .. 1	I.	31	2 52.80	2.172	69.55	19 .. 22	I.
Feb. 1	3 58.39	2.026	67.20	3 .. 6	I.	Apr. 1	3 45.51	2.218	70.33	26 .. 29	I.
2	4 46.41	1.984	66.61	8 .. 11	I.	2	4 39.07	2.238	70.73	31 .. 34	I.
3	5 34.00	1.989	66.70	12 .. 15	I.	3	5 32.63	2.217	70.40	36 .. 39	I.
4	6 22.14	2.028	67.30	18 .. 21	I.	4	6 25.13	2.151	69.41	41 .. 44	I.
5	7 11.45	2.082	68.15	24 .. 27	I.	5	7 15.62	2.053	67.84	52 .. 55	I.
6	8 2.02	2.130	68.85	30 .. 33	I.	6	8 3.59	1.943	66.03	61 .. 64	I.
7	8 53.47	2.150	69.09	35 .. 38	I.	7	8 48.92	1.839	64.30	67 .. 70	I.
8	9 44.92	2.129	68.69	40 .. 43	I.	8	9 32.06	1.760	62.89	73 .. 76	I.
9	10 35.34	2.066	67.64	48 .. 51	I.	9	10 13.65	1.712	62.01	81 .. 84	I.
10	11 23.88	1.976	66.15	59 .. 62	II.	10	10 54.50	1.700	61.75	85 .. 88	I.
11	12 10.09	1.876	64.52	65 .. 68	II.	11	11 35.55	1.728	62.21	93 .. 96	I.
12	12 53.98	1.785	63.04	71 .. 74	II.	12	12 17.77	1.798	63.38	101 .. 104	II.
13	13 35.97	1.719	61.96	79 .. 82	II.	13	13 2.19	1.910	65.24	107 .. 110	II.
14	14 16.75	1.685	61.44	83 .. 86	II.	14	13 49.73	2.057	67.64	110 .. 113	II.
15	14 57.18	1.691	61.62	91 .. 94	II.	15	14 41.09	2.224	70.29	117 .. 120	II.
16	15 38.27	1.741	62.53	97 .. 100	II.	16	15 36.37	2.378	72.72	125 .. 128	II.
17	16 21.11	1.838	64.22	105 .. 108	II.	17	16 34.86	2.482	74.30	132 .. 135	II.
18	17 6.86	1.983	66.62	109 .. 112	II.	18	17 34.90	2.505	74.67	141 .. 144	II.
19	17 56.60	2.169	69.55	113 .. 116	II.	19	18 34.48	2.447	73.81	149 .. 152	II.
20	18 51.07	2.372	72.63	123 .. 126	II.	20	19 31.94	2.337	72.16	155 .. 158	II.
21	19 50.22	2.546	75.19	130 .. 133	II.	21	20 26.56	2.218	70.30	161 .. 164	II.
22	20 52.77	2.643	76.52	139 .. 142	II.	22	21 18.56	2.122	68.76	168 .. 171	II.
23	21 56.36	2.633	76.26		II.	23	22 8.74	2.069	67.87		II.
24	22 58.42	2.527	74.66		II.	24	22 58.18	2.060	67.69		II.
25	23 57.29	2.377	72.43		II.	25	23 47.97	2.096	68.23		II.
27	0 52.56	2.235	70.31		I.	27	0 38.99	2.160	69.23		I.
28	1 44.83	2.130	68.74		I.	28	1 31.68	2.230	70.37		I.
29	2 35.16	2.073	67.91		I.	29	2 25.88	2.280	71.19		I.
30	3 24.68	2.061	67.79	10 .. 13	I.	30	3 20.75	2.283	71.32	34 .. 37	I.
31	4 14.36	2.084	68.23	16 .. 19	I.	31	4 15.03	2.230	70.65	39 .. 42	I.

WASHINGTON MERIDIAN.

Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
May 1	4 15.03	2.230	70.65	30 .. 42	I.	July 1	5 21.85	1.660	61.36	84 .. 87	I.
2	5 7.42	2.130	69.08	47 .. 50	I.	2	6 1.76	1.674	61.63	91 .. 94	I.
3	5 57.07	2.007	67.14	58 .. 61	I.	3	6 42.62	1.740	62.75	98 .. 101	I
4	6 43.74	1.885	65.17	65 .. 68	I.	4	7 25.70	1.859	64.71	106 .. 109	I.
5	7 27.73	1.786	63.50	70 .. 73	I.	5	8 12.23	2.028	67.38	110 .. 113	I.
6	8 9.73	1.720	62.34	78 .. 81	I.	6	9 3.34	2.237	70.55	115 .. 118	I.
7	8 50.60	1.693	61.82	83 .. 86	I.	7	9 59.60	2.449	73.67	124 .. 127	I.
8	9 31.34	1.710	62.05	91 .. 94	I.	8	11 0.48	2.609	75.96	130 .. 133	I.
9	10 13.03	1.773	63.04	97 .. 100	I.	9	12 4.03	2.662	76.69	139 .. 142	II.
10	10 56.78	1.880	64.79	106 .. 109	I.	10	13 7.35	2.593	75.70	148 .. 151	II.
11	11 43.61	2.030	67.18	109 .. 112	I.	11	14 7 87	2.441	73.54	154 .. 157	II.
12	12 34.42	2.207	69.95	113 .. 116	II.	12	15 4.36	2.269	71.01	162 .. 165	II.
13	13 29.51	2.380	72.60	123 .. 126	II.	13	15 56.95	2.123	68.84	168 .. 171	II.
14	14 28.27	2.504	74.49	130 .. 133	II.	14	16 46.64	2.028	67.39	1 .. 4	II.
15	15 29.04	2.540	75.08	138 .. 141	II.	15	17 34.73	1.990	66.80	6 .. 9	II.
16	16 29.50	2.482	74.27	146 .. 149	II.	16	18 22.55	2.004	67.03	10 .. 13	II.
17	17 27.66	2.357	72.46	153 .. 156	II.	17	19 11.23	2.059	67.88	14 .. 17	II.
18	18 22.53	2.216	70.36	157 .. 160	II.	18	20 1.55	2.136	69.05	20 .. 23	II.
19	19 14.20	2.097	68.47	166 .. 169	II.	19	20 53.75	2.210	70.12	28 .. 31	II.
20	20 3.51	2.022	67.23	173 .. 2	II.	20	21 47.38	2.250	70.67		II.
21	20 51.61	1.997	66.79	3 .. 6	II.	21	22 41.32	2.234	70.38		II.
22	21 39.74	2.022	67.14		II.	22	23 34.17	2.161	69.20		II.
23	22 28.98	2.088	68.12		II.	24	0 24.72	2.046	67.43		I.
24	23 20.10	2.175	69.46		II.	25	1 12.29	1.918	65.41		I.
26	0 13.31	2.256	70.68		I.	26	1 56.87	1.801	63.51		I.
27	1 8.10	2.299	71.38		I.	27	2 38.93	1.710	62.05	77 .. 80	I.
28	2 3.22	2.282	71.18		I.	28	3 19.25	1.656	61 19	83 .. 86	I.
29	2 57.17	2.203	70.03		I.	29	3 58.78	1.645	61.07	86 .. 89	I.
30	3 48.64	2.082	68.21	53 .. 56	I.	30	4 38.60	1.681	61.75	96 .. 99	I.
31	4 36.98	1.948	66.12	62 .. 65	I.	31	5 19.87	1.767	63.24	103 .. 106	I.
June 1	5 22.22	1.827	64.20	68 .. 71	I.	Aug. 1	6 3.81	1.904	65.53	108 .. 111	I.
2	6 4.90	1.737	62.70	74 .. 77	I.	2	6 51.60	2.087	68.41	112 .. 115	I.
3	6 45.89	1.686	61.82	83 .. 86	I.	3	7 44.21	2.300	71.65	121 .. 124	I.
4	7 26.20	1.681	61.70	85 .. 87	I.	4	8 41.88	2.500	74.75	128 .. 131	I.
5	8 6.95	1.724	62.39	95 .. 98	I.	5	9 43.67	2.631	76.41	135 .. 138	I.
6	8 49.34	1.817	63.90	103 .. 106	I.	6	10 47.33	2.650	76.62	144 .. 147	I.
7	9 34.56	1.960	66.17	107 .. 110	I.	7	11 50.05	2.560	75.27	151 .. 154	I.
8	10 23.74	2.145	69.03	111 .. 114	I.	8	12 49.72	2.409	73.07	157 .. 160	II.
9	11 17.64	2.347	72.07	120 .. 123	I.	9	13 45.62	2.255	70.81	166 .. 169	II.
10	12 16.15	2.519	74.60	127 .. 130	II.	10	14 38.19	2.136	69.02	172 .. 1	II.
11	13 17.91	2.607	75.90	135 .. 138	II.	11	15 28.52	2.068	68.04	4 .. 7	II.
12	14 20.45	2.582	75.63	143 .. 146	II.	12	16 17.88	2.054	67.87	9 .. 12	II
13	15 21.12	2.461	73.88	151 .. 154	II.	13	17 7.45	2.084	68.38	12 .. 15	II.
14	16 18.24	2.298	71.52	156 .. 159	II.	14	17 58.10	2.140	69.27	19 .. 22	II.
15	17 11.48	2.145	69.22	164 .. 167	II.	15	18 50.22	2.201	70.23	26 .. 29	II.
16	18 1.50	2.033	67.47	171 .. 174	II.	16	19 43.60	2.239	70.73	31 .. 34	II.
17	18 49.48	1.975	66.55	3 .. 6	II.	17	20 37.37	2.231	70.56	36 .. 39	II.
18	19 36.74	1.973	66.48	7 .. 10	II.	18	21 30.32	2.171	69.55	42 .. 45	II.
19	20 24.54	2.018	67.14	11 .. 14	II.	19	22 21.28	2.069	67.90		II.
20	21 13.87	2.097	68.34	17 .. 20	II.	20	23 9.49	1.947	65.92		II.
21	22 5.30	2.188	69.69		II.	21	23 54.78	1.830	63.98		II.
22	22 58.75	2.259	70.73		II.	23	0 37.49	1.734	62.37		I.
23	23 53.36	2.281	71.05		II.	24	1 18.23	1.668	61.29		I.
25	0 47.73	2.238	70.40		I.	25	1 57.84	1.640	60.86		I.
26	1 40.33	2.138	68.91		I.	26	2 37.29	1.654	61.16	93 .. 96	I.
27	2 30.10	2.008	66.91		I.	27	3 17.60	1.712	62.23	101 .. 104	I.
28	3 16.67	1.876	64.85	66 .. 69	I.	28	3 59.85	1.817	64.06	107 .. 110	I.
29	4 0.31	1.766	63.09	71 .. 74	I.	29	4 45.15	1.966	66.53	110 .. 113	I.
30	4 41.72	1.692	61.88	80 .. 83	I.	30	5 34.48	2.150	69.48	116 .. 119	I.
31	5 21.85	1.660	61.36	84 .. 87	I.	31	6 28.41	2.344	72.43	124 .. 127	I.

WASHINGTON MERIDIAN.

Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1873.	Mean Time of Meridian Transit.	Diff. for 1h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Sept. 1	7 26.70	2.504	74.78	130 .. 133	I.	Nov. 1	9 37.73	2.095	68.50	1 .. 4	I.
2	8 27.99	2.585	75.90	140 .. 143	I.	2	10 28.20	2.120	68.85	6 .. 9	I.
3	9 30.05	2.567	75.57	148 .. 151	I.	3	11 19.84	2.190	69.90	11 .. 14	I
4	10 30.63	2.471	74.13	155 .. 158	I.	4	12 13.53	2.286	71.38	17 .. 20	II.
5	11 28.41	2.344	72.17	162 .. 165	I.	5	13 9.53	2.376	72.76	23 .. 26	II.
6	12 23.20	2.229	70.43	168 .. 171	II.	6	14 7.25	2.422	73.52	30 .. 33	II.
7	13 15.68	2.154	69.33	1 .. 4	II.	7	15 5.25	2.396	73.20	35 .. 38	II.
8	14 6.96	2.128	68.97	6 .. 9	II.	8	16 1.68	2.295	71.74	41 .. 44	II.
9	14 58.15	2.145	69.31	11 .. 14	II.	9	16 55.04	2.146	69.49	51 .. 54	II.
10	15 50.16	2.193	70.11	16 .. 19	II.	10	17 44.59	1.985	66.98	60 .. 63	II.
11	16 43.44	2.246	70.98	23 .. 26	II.	11	18 30.45	1.841	64.63	67 .. 70	II.
12	17 37.83	2.280	71.50	30 .. 33	II.	12	19 13.24	1.732	62.76	72 .. 75	II.
13	18 32.55	2.270	71.37	34 .. 37	II.	13	19 53.92	1.665	61.57	81 .. 84	II.
14	19 26.39	2.208	70.37	40 .. 43	II.	14	20 33.51	1.642	61.12	85 .. 88	II.
15	20 18.21	2.104	68.70	48 .. 51	II.	15	21 13.12	1.666	61.45	92 .. 95	II.
16	21 7.23	1.980	66.65	59 .. 62	II.	16	21 53.83	1.735	62.57		II.
17	21 53.25	1.858	64.59	67 .. 70	II.	17	22 36.73	1.848	64.41		II.
18	22 36.55	1.755	62.83		II.	18	23 22.81	1.908	66.81		II.
19	23 17.74	1.683	61.58		II.	20	0 12.79	2.169	69.50		I.
20	23 57.63	1.647	60.95		II.	21	1 6.81	2.328	71.95		I.
22	0 37.12	1.650	61.00		I.	22	2 4.14	2.435	73.62		I.
23	1 17.15	1.693	61.78		I.	23	3 3.08	2.459	74.05	140 .. 143	I.
24	1 58.71	1.778	63.30		I.	24	4 1.55	2.399	73.22	148 .. 151	I.
25	2 42.80	1.903	65.42	108 .. 111	I.	25	4 57.84	2.287	71.59	153 .. 156	I.
26	3 30.29	2.060	68.01	113 .. 116	I.	26	5 51.24	2.166	69.75	158 .. 161	I.
27	4 21.75	2.229	70.71	123 .. 126	I.	27	6 41.99	2.071	68.26	166 .. 169	I.
28	5 17.15	2.381	73.04	129 .. 132	I.	28	7 30.99	2.022	67.46	173 .. 2	I.
29	6 15.59	2.476	74.48	136 .. 139	I.	29	8 19.48	2.028	67.50	4 .. 7	I.
30	7 15.38	2.491	74.67	144 .. 147	I.	30	9 8.75	2.087	68.35	9 .. 12	I.
Oct 1	8 14.61	2.433	73.75	151 .. 154	I.	Dec. 1	9 59.96	2.187	69.85	13 .. 16	I.
2	9 11.87	2.336	72.23	157 .. 160	I.	2	10 53.87	2.306	71.63	19 .. 22	I.
3	10 6.73	2.240	70.70	164 .. 167	I.	3	11 50.47	2.403	73.08	27 .. 30	I.
4	10 59.59	2.173	69.62	172 .. 1	I.	4	12 48.75	2.438	73.62	34 .. 37	II.
5	11 51.37	2.151	69.29	4 .. 7	I.	5	13 46.84	2.386	72.89	39 .. 42	II.
6	12 43.18	2.175	69.67	10 .. 13	II.	6	14 42.73	2.260	71.05	45 .. 48	II.
7	13 36.00	2.232	70.60	13 .. 16	II.	7	15 35.00	2.094	68.56	59 .. 62	II.
8	14 30.39	2.301	71.72	20 .. 23	II.	8	16 23.21	1.928	65.96	65 .. 68	II.
9	15 26.29	2.351	72.55	27 .. 30	II.	9	17 7.73	1.789	63.72	70 .. 73	II.
10	16 22.86	2.352	72.64	33 .. 36	II.	10	17 49.41	1.692	62.10	78 .. 81	II.
11	17 18.74	2.293	71.78	38 .. 41	II.	11	18 29.33	1.642	61.24	83 .. 86	II.
12	18 12.51	2.181	70.04	46 .. 49	II.	12	19 8.62	1.640	61.16	89 .. 92	II.
13	19 3.20	2.041	67.85	57 .. 60	II.	13	19 48.46	1.688	61.95	97 .. 100	II.
14	19 50.50	1.903	65.57	63 .. 66	II.	14	20 30.05	1.786	63.54	104 .. 107	II.
15	20 34.70	1.785	63.56	69 .. 72	II.	15	21 14.56	1.931	65.84	109 .. 112	II.
16	21 16.45	1.701	62.06	78 .. 81	II.	16	22 3.00	2.111	68.66		II.
17	21 56.64	1.655	61.22	83 .. 86	II.	17	22 55.94	2.300	71.52		II.
18	22 36.19	1.649	61.05		II.	18	23 53.12	2.454	73.81		II.
19	23 16.11	1.685	61.61		II.	20	0 53.10	2.525	74.86		I.
20	23 57.38	1.762	62.93		II.	21	1 53.54	2.492	74.42		I.
22	0 40.98	1.878	64.80		I.	22	2 52.13	2.380	72.82		I.
23	1 27.77	2.026	67.32		I.	23	3 47.51	2.235	70.69	156 .. 159	I.
24	2 18.30	2.185	69.85		I.	24	4 39.51	2.105	68.74	165 .. 168	I.
25	3 12.54	2.329	72.15	127 .. 130	I.	25	5 28.87	2.018	67.40	171 .. 174	I.
26	4 9.68	2.420	73.59	134 .. 137	I.	26	6 16.80	1.986	66.90	2 .. 5	I.
27	5 8.11	2.435	73.86	142 .. 145	I.	27	7 4.65	2.011	67.29	7 .. 10	I.
28	6 6.03	2.380	73.06	149 .. 152	I.	28	7 53.74	2.087	68.43	12 .. 15	I.
29	7 2.05	2.235	71.60	155 .. 158	I.	29	8 45.10	2.197	70.08	17 .. 20	I.
30	7 55.68	2.188	70.07	162 .. 165	I.	30	9 39.23	2.311	71.76	24 .. 27	I.
31	8 47.27	2.119	68.93	168 .. 171	I.	31	10 35.76	2.391	72.88	30 .. 33	I.
Nov. 1	9 37.73	2.095	68.50	1 .. 4	I.	32	11 33.38	2.397	72.84	34 .. 37	I.

MEAN PLACES FOR 1873.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
1	*d* Piscium . .	6.5	0 14 3.87	+3.086	+ 7 29 6.1	+20.06
2	44 Piscium . .	6	0 18 53.63	3.075	+ 1 14 11.6	19.99
3	10 Ceti . . .	6	0 20 6.60	3.077	— 0 45 12.0	19.98
4	δ Piscium . .	4.5	0 42 5.67	3.108	+ 6 53 37.3	19.71
5	ε PISCIUM . .	4	0 56 21.20	3.110	7 12 21.5	19.48
6	ζ^1 Piscium . .	5.4	1 7 5.83	+3.131	+ 6 54 11.7	+19.14
7	μ Piscium . .	5	1 23 31.90	3.139	5 29 14.0	18.56
8	η PISCIUM . .	4.3	1 24 41.32	3.200	14 41 26.4	18.72
9	ν Piscium . .	5.4	1 34 49.40	3.119	4 50 36.9	18.34
10	ο PISCIUM . .	4	1 38 41.40	3.162	8 31 3.9	18.26
11	ξ^1 CETI . . .	4.5	2 6 16.17	+3.169	+ 8 14 59.6	+17.08
12	ξ^2 Ceti . . .	4	2 21 24.55	3.184	7 53 23.0	16.36
13	μ Ceti . . .	4	2 38 4.73	3.234	9 34 35.0	15.42
14	π Arietis . . .	6.5	2 42 12.47	3.338	16 56 6.9	15.28
15	ε Arietis . . .	4.5	2 51 57.25	3.422	20 49 51.5	14.67
16	λ Ceti . . .	6.5	2 52 54.96	+3.215	+ 8 24 2.0	+14.63
17	δ Arietis . . .	4.5	3 4 22.21	3.421	19 14 41.3	13.92
18	ζ ARIETIS . .	4.5	3 7 36.27	3.437	20 34 20.9	13.65
19	*f* Tauri . . .	4	3 23 51.94	3.307	12 29 58.1	12.63
20	η TAURI . . .	3	3 39 56.25	3.554	23 42 38.0	11.46
21	*e* Tauri . . .	5	3 41 18.43	+3.281	+10 45 1.6	+11.36
22	λ Tauri . . .	3.4	3 53 38.76	3.317	12 7 47.1	10.52
23	A^1 Tauri . . .	5.4	3 57 11.34	3.537	21 43 57.9	10.18
24	γ TAURI . . .	4	4 12 34.05	3.407	15 19 9.0	9.06
25	υ^1 Tauri . . .	5.4	4 18 42.63	3.582	22 31 25.0	8.55
26	ε TAURI . . .	4.3	4 21 12.14	+3.496	+18 53 49.0	+ 8.37
27	α TAURI . . .	1	4 28 38.10	3.436	16 15 7.7	7.62
28	τ Tauri . . .	4.5	4 34 37.48	3.594	22 42 40.8	7.30
29	ι Tauri . . .	5	4 55 30.40	3.583	21 24 22.7	5.54
30	11 ORIONIS . .	5	4 57 18.85	3.425	15 13 31.0	5.41
31	υ Tauri . . .	6	5 20 0.47	+3.603	+21 49 34.7	+ 3.51
32	119 Tauri . . .	6.5	5 24 46.19	3.517	18 29 51.1	3.08
33	ζ Tauri . . .	3.4	5 30 3.43	3.586	21 3 46.6	2.59
34	χ^1 Orionis . .	5.4	5 46 51.73	3.552	20 15 0.8	+ 1.05
35	ν Orionis . .	5.4	6 0 19.33	3.428	14 46 52.7	— 0.05
36	η Geminorum .	3.4	6 7 12.71	+3.624	+22 32 28.4	— 0.64
37	μ GEMINORUM .	3	6 15 16.66	3.633	22 34 35.7	1.44
38	γ GEMINORUM .	2.3	6 30 22.52	3.469	16 30 20.4	2.68
39	ξ Geminorum .	4.3	6 38 9.82	3.373	13 1 49.0	3.49
40	ζ Geminorum .	4	6 56 34.61	3.565	20 45 16.1	4.92
41	λ Geminorum .	4.3	7 10 47.74	+3.456	+16 46 3.3	— 6.10
42	δ GEMINORUM .	3.4	7 12 32.25	3.591	22 12 51.0	6.23
43	63 Geminorum .	6.5	7 20 12.08	3.570	21 42 11.7	6.95
44	6 Canis Minoris	6.5	7 22 43.79	+3.346	+12 16 4.2	— 7.08

MEAN PLACES FOR 1873.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
45	68 Geminorum .	6.5	7 26 21.59	+3.431	+16 5 53.5	− 7.34
46	*f* Geminorum .	6	7 32 8.57	3.475	17 57 41.5	7.84
47	1 Cancri . . .	6	7 49 46.86	3.418	16 7 39.7	9.24
48	5 Cancri . . .	6	7 54 15.92	3.428	16 48 13.5	9.55
49	8 Cancri . . .	6	7 58 0.02	3.351	13 28 42.0	9.93
50	μ^2 Cancri . . .	5	8 0 17.39	+3.542	+21 57 1.6	−10.07
51	12 Cancri . . .	6	8 1 36.53	3.361	14 0 30.5	10.20
52	ζ^1 Cancri . . .	5.4	8 4 55.68	3.452	18 1 44.4	10.51
53	d^1 Cancri . . .	6	8 16 5.46	3.447	18 44 17.9	11.23
54	29 Cancri . . .	6	8 21 32.16	3.357	14 37 44.6	11.68
55	*θ* Cancri . . .	6	8 24 21.20	+3.432	+18 31 19.4	−11.86
56	c^1 Cancri . . .	6	8 30 12.34	3.257	10 5 46.9	12.23
57	39 Cancri . . .	6	8 32 47.86	3.460	20 27 15.4	12.42
58	*δ* Cancri . . .	4	8 37 28.00	3.422	18 37 10.0	12.96
59	A^2 Cancri . . .	6	8 39 58.24	3.295	12 34 27.3	12.94
60	*α* Cancri . . .	4	8 51 32.43	+3.290	+12 20 52.5	−13.68
61	*κ* CANCRI . . .	5	9 0 52.00	3.255	11 10 41.2	14.21
62	π^2 Cancri . . .	6	9 8 13.07	3.322	15 28 2.9	14.66
63	*ω* Leonis . . .	6	9 21 39.40	3.221	9 36 28.8	15.50
64	*h* Leonis . . .	6	9 25 9.08	3.225	10 16 27.2	15.70
65	10 Leonis . . .	5.6	9 30 30.43	+3.174	+ 7 24 17.0	−15.91
66	*o* Leonis . . .	4.3	9 34 22.67	3.225	10 28 7.6	16.19
67	B. A. C. 3336 .	5.6	9 39 28.09	3.169	7 17 39.6	16.40
68	*π* Leonis . . .	5	9 53 30.17	3.180	8 39 8.8	17.11
69	*α* LEONIS . .	1.2	10 1 36.44	3.203	12 35 14.2	17.42
70	43 Leonis . . .	6	10 16 21.76	+3.144	+ 7 11 12.1	−18.14
71	45 Leonis . . .	6	10 20 56.40	3.177	10 24 30.9	18.22
72	*ρ* LEONIS . .	4	10 26 7.42	3.166	9 57 34.2	18.39
73	34 Sextantis . .	6	10 36 3.96	3.104	4 14 44.2	18.74
74	*l* LEONIS . .	5	10 42 34.81	3.159	11 13 0.8	18.92
75	55 Leonis . . .	6	10 49 10.56	+3.092	+ 1 24 51.0	−19.10
76	*d* Leonis . . .	5	10 54 0.09	3.103	4 17 54.8	19.28
77	*c* Leonis . . .	5	10 54 9.87	3.117	6 46 58.9	19.27
78	*χ* Leonis . . .	5	10 58 27.96	3.101	8 1 17.8	19.42
79	p^5 Leonis . . .	5	11 7 15.99	3.085	+ 0 37 15.2	19.57
80	*φ* Leonis . . .	5.4	11 10 12.34	+3.053	− 2 57 28.7	−19.63
81	*σ* Leonis . . .	4	11 14 35.24	3.098	+ 6 43 29.4	19.68
82	79 Leonis . . .	6	11 17 31.37	3.084	2 6 15.3	19.74
83	*υ* LEONIS . .	5.4	11 30 26.82	3.072	0 7 21.2	19.84
84	*β* Virginis . .	3.4	11 44 4.84	3.127	2 28 48.4	20.29
85	10 Virginis . .	6	12 3 10.81	+3.074	+ 2 36 38.1	−20.28
86	*η* VIRGINIS . .	3.4	12 13 24.55	3.068	+ 0 2 21.7	20.03
87	*q* Virginis . .	6	12 27 13.58	3.092	− 8 45 3.9	19.89
88	*f* Virginis . .	6	12 30 15.03	+3.086	− 5 7 59.4	−19.97

MEAN PLACES FOR 1873.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
89	χ Virginis . .	5	12 32 41.92	+3.095	— 7 17 45.2	—19.90
90	γ Virginis . .	3.2	12 35 13.63	3.040	0 45 10.2	19.83
91	28 Virginis . .	6	12 35 23.88	3.100	6 48 2.1	19.83
92	38 Virginis . .	6	12 46 41.18	3.073	2 51 45.4	19.67
93	ψ Virginis . .	5	12 47 45.10	3.118	8 50 55.3	19.64
94	k Virginis . .	6	12 53 7.20	+3.089	— 3 7 30.4	—19.49
95	48 Virginis . .	6	12 57 21.80	3.086	2 58 43.1	19.45
96	θ VIRGINIS . .	4.5	13 3 22.58	3.101	4 51 36.6	19.31
97	α VIRGINIS . .	1	13 18 30.29	3.153	10 29 50.8	18.91
98	l^2 Virginis . .	5	13 25 21.99	3.118	5 35 58.0	18.73
99	h Virginis . .	5	13 26 16.88	+3.153	— 9 30 35.7	—18.69
100	m Virginis . .	6	13 34 56.90	3.143	8 3 42.3	18.35
101	83 Virginis . .	6	13 37 38.96	3.228	15 32 26.3	18.33
102	86 Virginis . .	6	13 39 10.44	3.189	11 47 21.5	18.20
103	89 Virginis . .	5	13 42 58.45	3.249	17 30 2.8	18.11
104	94 Virginis . .	6	13 59 34.44	+3.169	— 8 17 4.4	—17.37
105	κ Virginis . .	4.5	14 6 7.52	3.197	9 40 57.7	17.08
106	λ Virginis . .	5.4	14 12 14.49	3.240	12 47 7.6	16.78
107	2 Libræ . . .	6	14 16 35.67	3.220	11 7 59.5	16.69
108	5 Libræ . . .	6	14 38 57.78	3.300	14 55 24.1	15.45
109	$α^2$ LIBRÆ . . .	2.3	14 43 51.32	+3.307	—15 30 44.1	—15.20
110	$ι^1$ Libræ . . .	5.4	15 4 59.21	3.411	19 18 33.4	13.89
111	$ζ^1$ Libræ . . .	4	15 21 5.91	3.377	16 16 19.5	12.85
112	γ Libræ . . .	4.5	15 28 25.42	3.347	14 21 50.7	12.30
113	θ Libræ . . .	5.4	15 46 35.93	3.413	16 21 17.0	10.89
114	δ SCORPII . .	2.3	15 52 49.60	+3.536	—22 15 27.6	—10.56
115	$β^1$ SCORPII . .	2	15 58 3.26	3.477	19 27 20.5	10.19
116	$ν^2$ Scorpii . . .	4	16 4 37.07	3.481	19 7 41.8	9.65
117	σ Scorpii . . .	3.4	16 13 28.33	3.637	25 17 8.1	8.99
118	ψ Ophiuchi . .	5	16 16 40.41	3.504	19 44 16.9	8.79
119	χ Ophiuchi . .	6	16 19 39.95	+3.470	—18 9 56.7	— 8.49
120	α SCORPII . .	1.2	16 21 37.42	3.669	26 8 51.8	8.37
121	ω Ophiuchi . .	5	16 24 36.69	3.549	21 11 34.2	8.03
122	B. A. C. 5579 .	5	16 34 13.80	3.463	17 29 38.0	7.30
123	20 Ophiuchi . .	5	16 42 48.58	3.313	10 33 21.9	6.70
124	29 Ophiuchi . .	6	16 54 25.55	+3.504	—18 41 43.2	— 5.65
125	η Ophiuchi . .	2.3	17 3 5.77	3.436	15 33 54.3	4.81
126	ν Serpentis . .	5.4	17 13 41.10	3.372	12 42 55.0	4.00
127	θ Ophiuchi . .	3.4	17 14 12.73	3.682	24 52 13.5	4.03
128	ξ Serpentis . .	4.3	17 30 18.93	3.434	15 18 57.8	2.63
129	o Serpentis . .	5.4	17 34 16.65	+3.370	—12 48 17.9	— 2.27
130	4 Sagittarii . .	5	17 52 2.32	3.661	23 48 6.0	— 0.71
131	$μ^1$ SAGITTARII .	4	18 6 10.10	+3.586	—21 5 22.1	+ 0.54

MEAN PLACES FOR 1873.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
132	21 Sagittarii . .	5	18 17 47.14	+3.573	—20 36 26.1	+ 1.54
133	λ Sagittarii . .	3	18 20 8.00	3.706	25 29 23.4	1.53
134	B. A. C. 6279 .	5.4	18 21 57.59	3.418	14 38 41.4	1.90
135	24 Sagittarii . .	6	18 26 8.09	3.667	24 7 25.9	2.28
136	ν^1 Sagittarii . .	5	18 46 30.05	3.626	22 53 54.1	4.05
137	ξ^2 Sagittarii . .	4	18 50 9.04	+3.582	—21 16 16.1	+ 4.36
138	ο Sagittarii . .	4	18 57 4.22	3.598	21 55 29.2	4.92
139	π Sagittarii . .	3	19 2 12.53	3.573	21 13 22.1	5.39
140	d SAGITTARII .	5	19 10 12.18	3.513	19 10 32.8	6.09
141	ρ^1 Sagittarii . .	4	19 14 18.41	3.487	18 5 1.6	6.45
142	υ Sagittarii . .	5.4	19 14 27.25	+3.444	—16 11 30.0	+ 6.36
143	e^2 Sagittarii . .	5	19 35 15.20	3.438	16 25 7.9	8.14
144	f Sagittarii . .	5	19 38 57.15	3.506	20 3 49.6	8.37
145	g Sagittarii . .	6.5	19 50 44.84	3.409	15 49 35.1	9.27
146	63 Sagittarii . .	6	19 54 51.66	3.366	13 59 8.8	9.71
147	ξ^2 Capricorni .	6	20 5 21.36	+3.350	—12 59 10.5	+10.28
148	α^2 CAPRICORNI .	3.4	20 11 0.37	3.333	12 56 11.4	10.86
149	ρ Capricorni .	5	20 21 36.81	3.430	18 13 52.7	11.64
150	τ^2 Capricorni .	5	20 32 10.11	3.362	15 23 56.0	12.33
151	ε Aquarii . .	4.3	20 40 48.08	3.257	9 57 32.3	12.92
152	μ AQUARII . .	5.4	20 45 48.10	+3.240	— 9 27 28.6	+13.26
153	θ Capricorni .	4	20 58 48.40	3.384	17 44 7.1	14.08
154	ν Aquarii . .	4.5	21 2 40.35	3.273	11 53 3.5	14.36
155	β AQUARII . .	3	21 24 52.33	3.164	6 7 42.0	15.64
156	ξ AQUARII . .	5.4	21 30 59.36	3.198	8 25 20.4	15.95
157	λ Capricorni .	5.6	21 39 41.83	+3.237	—11 57 1.3	+16.43
158	θ AQUARII . .	4.5	22 10 7.85	3.170	8 24 52.6	17.78
159	ρ Aquarii . .	5.6	22 13 30.94	3.163	8 27 26.7	17.98
160	γ Aquarii . .	4.3	22 15 5.83	3.104	2 1 34.2	18.04
161	ζ Aquarii . .	3.4	22 22 17.47	3.091	0 40 7.4	18.31
162	σ Aquarii . .	5.4	22 23 55.41	+3.182	—11 19 34.5	+18.40
163	η AQUARII . .	4.3	22 28 49.77	3.084	0 46 16.4	18.44
164	κ Aquarii . .	5	22 31 10.68	3.112	4 52 56.0	18.48
165	78 Aquarii . .	6	22 47 57.42	3.129	— 7 52 39.2	19.09
166	β Piscium . .	5.4	22 57 24.98	3.057	+ 3 8 12.3	19.31
167	φ Aquarii . .	4.5	23 7 44.75	+3.113	— 6 43 59.0	+19.37
168	γ Piscium . .	4	23 10 34.88	3.110	+ 2 35 20.2	19.63
169	κ Piscium . .	5.4	23 20 25.42	3.078	0 33 38.1	19.66
170	ι PISCIUM . .	4.5	23 33 25.16	3.085	4 56 17.9	19.48
171	19 Piscium . .	6	23 39 54.41	3.067	2 47 0.2	20.00
172	26 Piscium . .	6	23 48 38.13	+3.069	+ 6 21 56.7	+20.06
173	ω PISCIUM . .	4	23 52 47.44	3.078	6 9 37.4	19.94
174	c^3 Piscium . .	6	23 56 0.45	+3.066	+ 7 46 49.7	+20.02

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.			FEBRUARY.			MARCH.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d 1.0	16′ 35″.3	60′ 46″.5	″ −0.78	16′ 14″.7	59′ 30″.8	″ −2.23	16′ 20″.5	59′ 52″.1	″ −2.15
1.5	16 32.3	60 35.3	1.08	16 7.3	59 3.5	2.31	16 13.2	59 25.3	2.31
2.0	16 28.3	60 20.8	1.34	15 59.7	58 35.6	2.34	16 5.5	58 57.0	2.41
2.5	16 23.6	60 3.5	1.55	15 52.1	58 7.6	2.32	15 57.6	58 27.8	2.45
3.0	16 18.3	59 43.9	1.71	15 44.6	57 40.1	2.26	15 49.6	57 58.5	2.44
3.5	16 12.5	59 22.7	1.82	15 37.4	57 13.6	2.17	15 41.7	57 29.6	2.38
4.0	16 6.5	59 0.4	1.89	15 30.5	56 48.3	2.05	15 34.1	57 1.6	2.29
4.5	16 0.2	58 37.6	1.91	15 24.0	56 24.5	1.91	15 26.8	56 34.9	2.15
5.0	15 54.0	58 14.7	1.90	15 18.0	56 2.4	1.77	15 20.0	56 9.9	2.01
5.5	15 47.9	57 52.1	1.87	15 12.5	55 42.1	1.61	15 13.7	55 46.8	1.84
6.0	15 41.9	57 30.1	1.81	15 7.5	55 23.7	1.45	15 8.0	55 25.9	1.65
6.5	15 36.1	57 8.9	1.73	15 3.0	55 7.2	1.30	15 3.0	55 7.2	1.46
7.0	15 30.6	56 48.6	1.65	14 59.0	54 52.6	1.14	14 58.5	54 50.8	1.27
7.5	15 25.3	56 29.4	1.55	14 55.5	54 39.8	0.99	14 54.7	54 36.8	1.07
8.0	15 20.4	56 11.4	1.45	14 52.5	54 28.9	0.84	14 51.5	54 25.1	0.88
8.5	15 15.9	55 54.6	1.36	14 50.0	54 19.7	0.70	14 48.9	54 15.7	0.69
9.0	15 11.6	55 38.9	1.26	14 48.0	54 12.1	0.56	14 47.0	54 8.5	0.51
9.5	15 7.6	55 24.4	1.16	14 46.3	54 6.1	0.44	14 45.6	54 3.4	0.35
10.0	15 4.0	55 11.0	1.06	14 45.1	54 1.6	0.32	14 44.7	54 0.2	0.18
10.5	15 0.7	54 58.8	0.97	14 44.3	53 58.5	0.20	14 44.4	53 58.9	−0.03
11.0	14 57.6	54 47.7	0.89	14 43.8	53 56.7	−0.09	14 44.5	53 59.4	+0.10
11.5	14 54.9	54 37.6	0.80	14 43.6	53 56.2	+0.01	14 45.1	54 1.4	0.23
12.0	14 52.4	54 28.5	0.71	14 43.8	53 57.0	0.12	14 46.0	54 4.9	0.35
12.5	14 50.3	54 20.6	0.62	14 44.4	53 59.1	0.23	14 47.3	54 9.8	0.46
13.0	14 48.4	54 13.8	0.52	14 45.3	54 2.5	0.33	14 49.0	54 15.9	0.56
13.5	14 46.8	54 8.1	0.42	14 46.6	54 7.2	0.45	14 51.0	54 23.2	0.65
14.0	14 45.6	54 3.6	0.32	14 48.3	54 13.3	0.56	14 53.3	54 31.6	0.74
14.5	14 44.8	54 0.4	0.22	14 50.3	54 20.8	0.69	14 55.8	54 41.0	0.82
15.0	14 44.3	53 58.6	−0.10	14 52.8	54 29.8	0.81	14 58.7	54 51.4	0.91
15.5	14 44.2	53 58.2	+0.03	14 55.7	54 40.4	0.94	15 1.8	55 2.8	0.99
16.0	14 44.5	53 59.4	0.17	14 59.0	54 52.6	1.08	15 5.1	55 15.2	1.07
16.5	14 45.3	54 2.3	0.32	15 2.7	55 6.4	1.22	15 8.8	55 28.6	1.15
17.0	14 46.6	54 7.0	0.47	15 7.0	55 22.0	1.37	15 12.7	55 42.9	1.23
17.5	14 48.4	54 13.7	0.64	15 11.7	55 39.3	1.52	15 16.9	55 58.2	1.32
18.0	14 50.8	54 22.5	0.82	15 16.9	55 58.4	1.66	15 21.3	56 14.5	1.40
18.5	14 53.7	54 33.4	1.00	15 22.6	56 19.2	1.80	15 26.0	56 31.7	1.47
19.0	14 57.3	54 46.5	1.19	15 28.7	56 41.6	1.93	15 30.9	56 49.9	1.55
19.5	15 1.5	55 1.8	1.37	15 35.2	57 5.5	2.06	15 36.1	57 9.0	1.63
20.0	15 6.3	55 19.4	1.56	15 42.0	57 30.7	2.15	15 41.5	57 29.0	1.69
20.5	15 11.7	55 39.3	1.74	15 49.2	57 57.0	2.23	15 47.2	57 49.6	1.75
21.0	15 17.7	56 1.4	1.92	15 56.6	58 24.0	2.27	15 52.9	58 10.7	1.78
21.5	15 24.3	56 25.4	2.09	16 4.0	58 51.2	2.26	15 58.7	58 32.1	1.78
22.0	15 31.3	56 51.3	2.23	16 11.3	59 18.0	2.21	16 4.5	58 53.4	1.76
22.5	15 38.8	57 18.8	2.35	16 18.3	59 43.8	2.10	16 10.2	59 14.2	1.71
23.0	15 46.6	57 47.5	2.43	16 24.9	60 8.0	1.93	16 15.6	59 34.1	1.62
23.5	15 54.6	58 16.9	2.46	16 30.8	60 29.9	1.71	16 20.7	59 52.6	1.48
24.0	16 2.6	58 46.4	2.45	16 35.9	60 48.7	1.42	16 25.2	60 9.3	1.30
24.5	16 10.5	59 15.4	2.38	16 40.0	61 3.7	1.09	16 29.1	60 23.5	1.07
25.0	16 18.1	59 43.2	2.25	16 43.0	61 14.5	0.71	16 32.1	60 34.7	0.80
25.5	16 25.2	60 9.1	2.05	16 44.6	61 20.7	+0.31	16 34.2	60 42.4	0.49
26.0	16 31.5	60 32.3	1.80	16 44.9	61 21.9	−0.11	16 35.3	60 46.3	+0.17
26.5	16 36.9	60 52.1	1.48	16 43.9	61 18.0	0.53	16 35.3	60 46.2	−0.19
27.0	16 41.2	61 7.9	1.13	16 41.5	61 9.2	0.94	16 34.1	60 41.8	0.54
27.5	16 44.2	61 19.1	0.73	16 37.8	60 55.7	1.31	16 31.7	60 33.2	0.88
28.0	16 45.9	61 25.3	+0.31	16 33.0	60 37.9	1.64	16 28.3	60 20.7	1.21
28.5	16 46.2	61 26.3	−0.13	16 27.2	60 16.5	1.92	16 23.9	60 4.3	1.50
29.0	16 45.1	61 22.2	0.56	16 20.5	59 52.1	2.15	16 18.5	59 44.7	1.76
29.5	16 42.6	61 13.1	0.96	16 13.2	59 25.3	2.31	16 12.4	59 22.4	1.97
30.0	16 38.9	60 59.5	1.31	16 5.5	58 57.0	2.41	16 5.7	58 57.8	2.12
30.5	16 34.1	60 41.8	1.63	15 57.6	58 27.8	−2.45	15 58.6	58 31.7	2.23
31.0	16 28.3	60 20.7	1.89	$\Delta s = .272\ \Delta\pi$			15 51.3	58 4.6	2.28
31.5	16 21.8	59 56.8	−2.09				15 43.8	57 37.2	−2.28

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.			MAY.			JUNE.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d									
1.0	15′ 36″.4	57′ 10″.2	−2″.24	15′ 10″.2	55′ 34″.0	−1″.60	14′ 49″.4	54′ 17″.4	−0″.34
1.5	15 29.3	56 43.8	2.15	15 5.3	55 15.8	1.44	14 48.6	54 14.6	−0.13
2.0	15 22.4	56 18.7	2.03	15 0.9	54 59.6	1.26	14 48.4	54 14.2	+0.08
2.5	15 16.0	55 55.2	1.89	14 57.1	54 45.5	1 07	14 49.2	54 16.5	0.30
3.0	15 10.1	55 33.6	1.72	14 53.9	54 33.9	0.87	14 50.5	54 21.5	0.52
3.5	15 4.8	55 14.1	1.53	14 51.4	54 24.8	0.66	14 52.5	54 28.9	0.73
4.0	15 0.2	54 56.9	1.33	14 49.6	54 18.2	0.44	14 55.3	54 38.8	0.93
4.5	14 56.2	54 42.2	1.13	14 48.5	54 14.2	0.23	14 58.6	54 51.2	1.12
5.0	14 52.8	54 29.9	0.91	14 48.1	54 12.8	−0.01	15 2.6	55 5.8	1.30
5.5	14 50.2	54 20.3	0.70	14 48.5	54 14.0	+0.21	15 7.1	55 22.4	1.45
6.0	14 48.2	54 13.2	0.49	14 49.5	54 17.7	0.41	15 12.1	55 40.8	1.59
6.5	14 47.0	54 8.5	0.29	14 51.1	54 23.7	0.60	15 17.5	56 0.6	1.70
7.0	14 46.4	54 6.2	−0.09	14 53.4	54 32.0	0.78	15 23.2	56 21.6	1.78
7.5	14 46.4	54 6.2	+0.10	14 56.2	54 42.3	0.94	15 29.2	56 43.4	1.83
8.0	14 47.0	54 8.4	0.27	14 59.5	54 54.5	1.09	15 35.2	57 5.5	1.84
8.5	14 48.1	54 12.6	0.43	15 3.3	55 8.3	1.21	15 41.2	57 27.6	1.82
9.0	14 49.8	54 18.7	0.58	15 7.4	55 23.5	1.32	15 47.1	57 49.3	1.77
9.5	14 51.9	54 26.5	0.71	15 11.8	55 39.8	1.39	15 52.7	58 10.0	1.67
10.0	14 54.4	54 35.7	0.82	15 16.5	55 56.9	1.45	15 58.0	58 29.4	1.55
10.5	14 57.2	54 46.2	0.92	15 21.3	56 14.4	1.48	16 2.8	58 47.1	1.39
11.0	15 0.4	54 57.8	1.00	15 26.1	56 32.2	1.48	16 7.1	59 2.8	1.21
11.5	15 3.8	55 10.2	1.07	15 30.9	56 49.9	1.47	16 10.7	59 16.2	1.01
12.0	15 7.4	55 23.4	1.12	15 35.7	57 7.3	1.43	16 13.7	59 27.1	0.80
12.5	15 11.1	55 37.2	1.17	15 40.3	57 24.2	1.37	16 16.0	59 35.3	0.58
13.0	15 15.0	55 51.4	1.20	15 44.6	57 40.2	1.30	16 17.5	59 41.0	0.37
13.5	15 19.0	56 6.0	1.23	15 48.7	57 55.2	1.21	16 18.4	59 44.2	+0.16
14.0	15 23.0	56 20.8	1.24	15 52.5	58 9.1	1.11	16 18.7	59 44.9	−0.04
14.5	15 27.1	56 35.8	1.25	15 56.0	58 21.8	1.01	16 18.1	59 43.2	0.22
15.0	15 31.2	56 50.8	1.25	15 59.1	58 33.3	0.90	16 17.1	59 39.4	0.39
15.5	15 35.2	57 5.8	1.25	16 1.9	58 43.5	0.79	16 15.6	59 33.8	0.53
16.0	15 39.3	57 20.8	1.25	16 4.3	58 52.4	0.68	16 13.6	59 26.6	0.66
16.5	15 43.4	57 35.7	1.24	16 6.3	58 59.9	0.58	16 11.2	59 18.0	0.76
17.0	15 47.4	57 50.5	1.23	16 8.0	59 6.1	0.47	16 8.5	59 8.1	0.86
17.5	15 51.4	58 5.2	1.22	16 9.4	59 11.1	0.36	16 5.6	58 57.3	0.93
18.0	15 55.4	58 19.7	1.20	16 10.4	59 14.8	0.26	16 2.4	58 45.7	1.00
18.5	15 59.2	58 33.8	1.17	16 11.1	59 17.3	0.16	15 59.1	58 33.3	1.05
19.0	16 2.9	58 47.5	1.12	16 11.5	59 18.7	+0.06	15 55.6	58 20.4	1.10
19.5	16 6.5	59 0.6	1.06	16 11.5	59 18.8	−0.04	15 51.9	58 7.0	1.13
20.0	16 9.9	59 12.9	0.99	16 11.1	59 17.6	0.16	15 48.1	57 53.2	1.17
20.5	16 12.9	59 24.2	0.89	16 10.4	59 15.0	0.27	15 44.3	57 38.9	1.20
21.0	16 15.7	59 34.2	0.78	16 9.3	59 11.0	0.39	15 40.3	57 24.3	1.23
21.5	16 18.0	59 42.6	0.63	16 7.9	59 5.6	0.52	15 36.2	57 9.4	1.25
22.0	16 19.7	59 49.2	0.46	16 6.0	58 58.6	0.65	15 32.1	56 54.3	1.26
22.5	16 20.9	59 53.6	0.26	16 3.6	58 50.0	0.78	15 28.0	56 39.1	1.27
23.0	16 21.4	59 55.5	+0.05	16 0.9	58 39.8	0.91	15 23.8	56 23.8	1.27
23.5	16 21.2	59 54.7	−0.18	15 57.7	58 28.1	1.04	15 19.6	56 8.5	1.27
24.0	16 20.3	59 51.1	0.42	15 54.1	58 14.9	1.16	15 15.5	55 53.3	1.25
24.5	16 18.5	59 44.5	0.67	15 50.1	58 0.2	1.28	15 11.5	55 38.5	1.21
25.0	16 15.9	59 35.0	0.91	15 45.7	57 44.2	1.37	15 7.6	55 24.2	1.16
25.5	16 12.5	59 22.6	1.14	15 41.1	57 27.2	1.45	15 3.9	55 10.5	1.10
26.0	16 8.4	59 7.6	1.36	15 36.2	57 9.3	1.51	15 0.4	54 57.7	1.02
26.5	16 3.6	58 50.1	1.55	15 31.2	56 50.9	1.54	14 57.2	54 45.9	0.93
27.0	15 58.3	58 30.6	1.70	15 26.1	56 32.2	1.55	14 54.3	54 35.4	0.81
27.5	15 52.6	58 9.5	1.82	15 21.0	56 13.5	1.54	14 51.8	54 26.3	0.69
28.0	15 46.5	57 47.2	1.90	15 16.0	55 55.3	1.49	14 49.8	54 18.9	0.54
28.5	15 40.2	57 24.1	1.94	15 11.3	55 37.7	1.42	14 48.3	54 13.4	0.38
29.0	15 33.9	57 0.8	1.94	15 6.8	55 21.1	1.33	14 47.4	54 10.0	0.20
29.5	15 27.6	56 37.7	1.90	15 2.6	55 5.8	1.21	14 46.9	54 8.6	−0.01
30.0	15 21.5	56 15.3	1.83	14 58.8	54 52.1	1.07	14 47.2	54 9.5	+0.18
30.5	15 15.7	55 53.9	−1.73	14 55.6	54 40.2	0.91	14 48.2	54 12.9	0.39
31.0	$\Delta s = .272\,\Delta\pi$			14 52.9	54 30.3	0.73	14 49.8	54 18.8	0.60
31.5				14 50.8	54 22.6	−0.54	14 52.1	54 27.2	+0.80

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.			AUGUST.			SEPTEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	14 49.8	54 18.8	+0.60	15 12.4	55 41.7	+1.79	15 51.8	58 6.6	+2.38
1.5	14 52.1	54 27.2	0.80	15 18.5	56 4.2	1.96	15 59.6	58 35.3	2.39
2.0	14 55.0	54 38.1	1.01	15 25.1	56 28.7	2.11	16 7.4	59 3.8	2.36
2.5	14 58.7	54 51.5	1.22	15 32.2	56 54.8	2.24	16 14.9	59 31.6	2.27
3.0	15 3.0	55 7.4	1.42	15 39.7	57 22.2	2.33	16 22.1	59 57.9	2.11
3.5	15 8.0	55 25.6	1.61	15 47.4	57 50.5	2.39	16 28.6	60 21.9	1.90
4.0	15 13.5	55 45.8	1.77	15 55.2	58 19.2	2.40	16 34.4	60 43.1	1.63
4.5	15 19.5	56 8.0	1.92	16 3.0	58 47.8	2.36	16 39.2	61 0.7	1.31
5.0	15 26.0	56 31.8	2.04	16 10.6	59 15.6	2.26	16 42.9	61 14.2	0.94
5.5	15 32.8	56 56.9	2.13	16 17.7	59 41.8	2.11	16 45.3	61 23.0	0.54
6.0	15 39.9	57 22.8	2.19	16 24.3	60 5.9	1.90	16 46.3	61 26.8	+0.11
6.5	15 47.0	57 49.1	2.19	16 30.1	60 27.1	1.63	16 45.9	61 25.6	−0.31
7.0	15 54.1	58 15.2	2.15	16 34.9	60 44.9	1.32	16 44.3	61 19.4	0.71
7.5	16 1.0	58 40.5	2.07	16 38.6	60 58.6	0.97	16 41.3	61 8.3	1.12
8.0	16 7.6	59 4.5	1.93	16 41.2	61 7.9	0.58	16 37.0	60 52.7	1.47
8.5	16 13.6	59 26.6	1.75	16 42.4	61 12.5	+0.19	16 31.7	60 33.2	1.78
9.0	16 18.9	59 46.3	1.53	16 42.4	61 12.3	−0.21	16 25.5	60 10.4	2.02
9.5	16 23.4	60 3.0	1.26	16 41.1	61 7.4	0.60	16 18.6	59 45.0	2.21
10.0	16 27.1	60 16.4	0.97	16 38.5	60 58.1	0.95	16 11.2	59 17.7	2.33
10.5	16 29.8	60 26.1	0.65	16 34.8	60 44.7	1.27	16 3.4	58 49.3	2.40
11.0	16 31.4	60 32.0	0.34	16 30.2	60 27.7	1.55	15 55.6	58 20.5	2.41
11.5	16 32.0	60 34.1	+0.02	16 24.8	60 7.8	1.77	15 47.8	57 51.8	2.37
12.0	16 31.5	60 32.4	−0.30	16 18.7	59 45.5	1.94	15 40.1	57 23.7	2.30
12.5	16 30.0	60 27.1	0.58	16 12.2	59 21.5	2.05	15 32.8	56 56.8	2.19
13.0	16 27.7	60 18.6	0.84	16 5.4	58 56.6	2.11	15 25.9	56 31.4	2.05
13.5	16 24.6	60 7.2	1.06	15 58.4	58 31.1	2.13	15 19.4	56 7.6	1.90
14.0	16 20.8	59 53.3	1.25	15 51.6	58 5.7	2.12	15 13.5	55 45.8	1.74
14.5	16 16.5	59 37.4	1.40	15 44.7	57 40.5	2.07	15 8.1	55 25.9	1.57
15.0	16 11.8	59 19.9	1.51	15 38.1	57 16.2	1.98	15 3.2	55 8.1	1.40
15.5	16 6.7	59 1.4	1.58	15 31.8	56 53.0	1.88	14 58.9	54 52.4	1.22
16.0	16 1.5	58 42.2	1.62	15 25.8	56 31.1	1.78	14 55.2	54 38.8	1.05
16.5	15 56.2	58 22.6	1.64	15 20.2	56 10.5	1.65	14 52.1	54 27.2	0.88
17.0	15 50.8	58 3.0	1.63	15 15.0	55 51.4	1.53	14 49.4	54 17.6	0.72
17.5	15 45.5	57 43.6	1.61	15 10.2	55 33.8	1.40	14 47.3	54 9.8	0.57
18.0	15 40.3	57 24.5	1.57	15 5.8	55 17.7	1.27	14 45.7	54 3.9	0.42
18.5	15 35.3	57 6.0	1.52	15 1.9	55 3.2	1.14	14 44.6	53 59.8	0.28
19.0	15 30.4	56 48.1	1.46	14 58.3	54 50.2	1.02	14 43.9	53 57.2	0.15
19.5	15 25.7	56 30.9	1.41	14 55.2	54 38.7	0.90	14 43.6	53 56.2	−0.02
20.0	15 21.2	56 14.4	1.34	14 52.5	54 28.6	0.78	14 43.8	53 56.7	+0.10
20.5	15 17.0	55 58.6	1.28	14 50.1	54 20.0	0.66	14 44.3	53 58.5	0.21
21.0	15 12.9	55 43.7	1.21	14 48.1	54 12.7	0.55	14 45.1	54 1.5	0.30
21.5	15 9.1	55 29.6	1.14	14 46.5	54 6.7	0.45	14 46.2	54 5.8	0.40
22.0	15 5.5	55 16.3	1.07	14 45.2	54 2.0	0.34	14 47.8	54 11.4	0.51
22.5	15 2.1	55 3.9	1.00	14 44.3	53 58.6	0.23	14 49.6	54 18.3	0.62
23.0	14 58.9	54 52.4	0.92	14 43.7	53 56.5	0.12	14 51.8	54 26.4	0.73
23.5	14 56.0	54 41.8	0.84	14 43.5	53 55.8	−0.01	14 54.4	54 35.8	0.84
24.0	14 53.4	54 32.2	0.75	14 43.7	53 56.4	+0.11	14 57.3	54 46.6	0.95
24.5	14 51.1	54 23.7	0.66	14 44.2	53 58.5	0.24	15 0.6	54 58.7	1.06
25.0	14 49.1	54 16.3	0.56	14 45.2	54 2.1	0.37	15 4.3	55 12.2	1.19
25.5	14 47.4	54 10.2	0.45	14 46.7	54 7.4	0.51	15 8.4	55 27.3	1.31
26.0	14 46.1	54 5.5	0.34	14 48.6	54 14.4	0.66	15 12.9	55 43.8	1.43
26.5	14 45.2	54 2.2	0.21	14 51.0	54 23.3	0.82	15 17.8	56 1.7	1.56
27.0	14 44.8	54 0.6	−0.06	14 53.9	54 34.1	0.98	15 23.1	56 21.1	1.68
27.5	14 44.9	54 0.9	+0.10	14 57.4	54 46.8	1.15	15 28.7	56 41.9	1.79
28.0	14 45.5	54 3.2	0.27	15 1.4	55 1.6	1.31	15 34.7	57 4.0	1.89
28.5	14 46.7	54 7.5	0.45	15 6.0	55 18.4	1.48	15 41.1	57 27.2	1.98
29.0	14 48.5	54 14.0	0.64	15 11.1	55 37.3	1.65	15 47.7	57 51.4	2.04
29.5	14 50.9	54 22.8	0.83	15 16.8	55 58.1	1.82	15 54.4	58 16.2	2.08
30.0	14 53.9	54 33.9	1.02	15 23.0	56 20.8	1.97	16 1.2	58 41.3	2.09
30.5	14 57.5	54 47.3	1.22	15 29.7	56 45.3	2.11	16 8.0	59 6.2	+2.06
31.0	15 1.8	55 3.1	1.42	15 36.7	57 11.3	2.22	Δs = .272 Δπ		
31.5	15 6.8	55 21.3	+1.61	15 44.2	57 38.5	+2.31			

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	16 14.6	59 30.4	+1.98	16 28.7	60 22.2	+0.49	16 12.2	59 21.5	−0.60
1.5	16 20.9	59 53.3	1.85	16 29.9	60 26.5	+0.21	16 9.9	59 13.2	0.79
2.0	16 26.6	60 14.4	1.66	16 30.2	60 27.3	−0.09	16 7.0	59 2.4	0.99
2.5	16 31.6	60 32.9	1.43	16 29.3	60 24.2	0.40	16 3.5	58 49.4	1.18
3.0	16 35.8	60 48.4	1.14	16 27.4	60 17.4	0.72	15 59.3	58 34.2	1.35
3.5	16 39.0	61 0.1	0.81	16 24.6	60 7.0	1.02	15 54.7	58 17.1	1.50
4.0	16 41.1	61 7.6	0.45	16 20.8	59 53.0	1.31	15 49.5	57 58.3	1.62
4.5	16 41.9	61 10.6	+0.05	16 16.1	59 35.7	1.56	15 44.1	57 38.2	1.72
5.0	16 41.4	61 8.9	−0.36	16 10.6	59 15.6	1.78	15 38.4	57 17.3	1.77
5.5	16 39.7	61 2.5	0.73	16 4.5	58 53.2	1.95	15 32.5	56 55.9	1.80
6.0	16 36.7	60 51.4	1.10	15 57.9	58 29.0	2.08	15 26.7	56 34.4	1.78
6.5	16 32.5	60 36.0	1.45	15 51.0	58 3.5	2.16	15 21.0	56 13.3	1.73
7.0	16 27.3	60 16.9	1.75	15 43.9	57 37.5	2.18	15 15.4	55 53.0	1.65
7.5	16 21.1	59 54.4	2.00	15 36.8	57 11.4	2.16	15 10.2	55 33.8	1.54
8.0	16 14.3	59 29.2	2.20	15 29.8	56 45.8	2.10	15 5.4	55 16.1	1.40
8.5	16 6.9	59 2.1	2.33	15 23.1	56 21.2	2.00	15 1.1	55 0.3	1.24
9.0	15 59.2	58 33.7	2.40	15 16.8	55 57.9	1.87	14 57.3	54 46.4	1.07
9.5	15 51.3	58 4.8	2.42	15 10.9	55 36.4	1.71	14 54.1	54 34.8	0.87
10.0	15 43.5	57 36.0	2.39	15 5.6	55 17.0	1.53	14 51.6	54 25.6	0.66
10.5	15 35.8	57 7.8	2.31	15 0.9	54 59.8	1.34	14 49.8	54 19.0	0.44
11.0	15 28.4	56 40.7	2.20	14 56.9	54 45.0	1.13	14 48.7	54 14.9	0.23
11.5	15 21.5	56 15.3	2.05	14 53.6	54 32.7	0.91	14 48.4	54 13.5	−0.01
12.0	15 15.1	55 51.6	1.89	14 50.9	54 23.0	0.70	14 48.7	54 14.8	+0.21
12.5	15 9.2	55 30.1	1.70	14 49.0	54 15.8	0.49	14 49.7	54 18.7	0.43
13.0	15 3.9	55 10.8	1.51	14 47.7	54 11.3	0.27	14 51.5	54 25.1	0.64
13.5	14 59.4	54 53.9	1.31	14 47.2	54 9.4	−0.05	14 53.9	54 34.1	0.84
14.0	14 55.4	54 39.4	1.11	14 47.4	54 9.9	+0.13	14 57.0	54 45.3	1.02
14.5	14 52.1	54 27.4	0.90	14 48.1	54 12.6	0.31	15 0.6	54 58.5	1.18
15.0	14 49.5	54 17.7	0.70	14 49.4	54 17.5	0.50	15 4.7	55 13.7	1.33
15.5	14 47.5	54 10.5	0.51	14 51.3	54 24.5	0.66	15 9.1	55 30.4	1.46
16.0	14 46.1	54 5.5	0.33	14 53.7	54 63.3	0.80	15 13.9	55 48.4	1.54
16.5	14 45.3	54 2.5	−0.15	14 56.6	54 43.8	0.93	15 19.3	56 7.4	1.61
17.0	14 45.0	54 1.6	+0.01	14 59.8	54 55.6	1.04	15 24.7	56 27.0	1.66
17.5	14 45.4	54 2.7	0.16	15 3.3	55 8.5	1.12	15 30.1	56 46.9	1.66
18.0	14 46.2	54 5.5	0.30	15 7.1	55 22.4	1.19	15 35.5	57 6.7	1.63
18.5	14 47.4	54 9.9	0.43	15 11.1	55 37.0	1.24	15 40.7	57 26.0	1.58
19.0	14 49.0	54 15.8	0.54	15 15.2	55 52.1	1.27	15 45.8	57 44.4	1.50
19.5	14 50.9	54 23.0	0.65	15 19.3	56 7.4	1.28	15 50.5	58 1.8	1.38
20.0	14 53.2	54 31.3	0.74	15 23.6	56 22.8	1.28	15 54.8	58 17.6	1.25
20.5	14 55.7	54 40.7	0.82	15 27.7	56 38.1	1.27	15 58.7	58 31.8	1.11
21.0	14 58.5	54 51.0	0.90	15 31.8	56 53.2	1.24	16 2.0	58 44.2	0.96
21.5	15 1.6	55 2.2	0.96	15 35.8	57 7.9	1.21	16 4.9	58 54.7	0.79
22.0	15 4.9	55 14.2	1.03	15 39.7	57 22.2	1.17	16 7.2	59 3.2	0.63
22.5	15 8.3	55 26.9	1.09	15 43.5	57 36.0	1.13	16 9.0	59 9.8	0.47
23.0	15 12.0	55 40.3	1.14	15 47.1	57 49.3	1.08	16 10.3	59 14.6	0.32
23.5	15 15.8	55 54.4	1.20	15 50.5	58 2.0	1.03	16 11.1	59 17.5	0.18
24.0	15 19.8	56 9.1	1.25	15 53.8	58 14.1	0.98	16 11.5	59 18.8	+0.04
24.5	15 24.0	56 24.5	1.31	15 57.0	58 25.5	0.93	16 11.4	59 18.6	−0.08
25.0	15 28.4	56 40.4	1.36	16 0.0	58 36.4	0.88	16 11.0	59 17.0	0.18
25.5	15 32.9	56 57.0	1.41	16 2.7	58 46.7	0.83	16 10.2	59 14.2	0.28
26.0	15 37.5	57 14.2	1.45	16 5.3	58 56.3	0.76	16 9.2	59 10.3	0.37
26.5	15 42.3	57 31.9	1.49	16 7.7	59 5.0	0.69	16 7.8	59 5.4	0.45
27.0	15 47.3	57 50.0	1.53	16 9.9	59 12.9	0.61	16 6.2	58 59.5	0.53
27.5	15 52.3	58 8.4	1.54	16 11.7	59 19.7	0.52	16 4.4	58 52.7	0.61
28.0	15 57.4	58 27.0	1.55	16 13.2	59 25.3	0.41	16 2.3	58 45.0	0.68
28.5	16 2.4	58 45.4	1.53	16 14.4	59 29.4	0.28	15 59.9	58 36.4	0.76
29.0	16 7.3	59 3.5	1.48	16 15.0	59 32.0	+0.14	15 57.3	58 26.8	0.84
29.5	16 12.0	59 20.8	1.41	16 15.3	59 32.7	−0.02	15 54.4	58 16.2	0.92
30.0	16 16.4	59 37.1	1.30	16 14.9	59 31.3	0.19	15 51.3	58 4.7	1.00
30.5	16 20.5	59 51.8	1.15	16 13.8	59 27.5	−0.41	15 47.9	57 52.9	1.08
31.0	16 23.9	60 4.5	0.97	$\Delta s = .272\,\Delta\pi$			15 44.2	57 38.7	1.16
31.5	16 26.7	60 14.8	+0.75				15 40.3	57 24.4	−1.24

WASHINGTON MEAN TIME.

PHASES.

Month.	First Quarter.	Full Moon.	Last Quarter.	New Moon.	First Quarter.
	d h m	d h m	d h m	d h m	
January	5 4 19.3	12 23 14.8	21 3 22.6	28 0 19.0	
February	3 16 57.6	11 18 25.0	19 18 15.3	26 10 14.3	
March	5 8 16.8	13 12 36.5	21 5 11.7	27 19 46.4	
April	4 1 27.8	12 4 43.2	19 12 39.6	26 5 34.4	
May	3 19 25.0	11 18 9.6	18 17 52.2	25 16 12.3	
June	2 13 11.1	10 4 53.3	16 22 23.9	24 4 4.3	d h m
July	2 6 2.0	9 13 25.5	16 3 50.1	23 17 25.6	31 21 21.1
August		7 20 44.3	14 11 33.3	22 8 22.3	30 10 39.9
September		6 4 1.0	12 22 32.6	21 0 42.9	28 21 47.9
October		5 12 23.4	12 13 17.4	20 17 47.0	28 7 1.8
November		3 22 40.3	11 7 39.9	19 10 28.4	26 15 4.8
December		3 11 12.4	11 4 45.8	19 1 41.2	25 22 56.5

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Apogee.	Perigee.	Apogee.	Greatest Libration.		
	d h	d h	d h	d h m	d h m	d h m
January	15 8.7	28 8.3		6 10 28.7 s.w.	22 9 36.8 s.e.	
February	11 10.5	25 20.9		3 11 51.7 s.w.	19 15 46.8 s.e.	
March	10 15.6	26 5.5		3 19 9.5 s.w.	19 12 33.6 s.e.	
April	7 6.2	23 2.5		1 0 36.6 s.w.	15 8 35.7 s.e.	28 23 0.1 s.w.
May	5 0.4	19 6.1			11 16 41.3 s.e.	26 7 48.8 s.w.
June	1 19.4	13 21.4	29 12.6		7 21 38.7 s.e.	21 19 51.9 s.w.
July		11 12.6	27 4.1		5 16 42.2 s.e.	18 10 31.9 s.w.
August		8 17.7	23 12.0	2 19 22.8 s.e.	15 2 1.1 s.w.	31 0 58.8 s.e.
September		6 3.1	19 14.6			
October		4 13.7	16 23.1			
November		1 20.2	13 15.8			
November	29 9.9					
December	11 12.0	24 4.3				

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables:

I = the inclination to the ecliptic of the moon's equator = 1° 28'.8.

☊ = mean longitude of the moon's ascending node (see page 250).

= mean longitude of the descending node of the moon's equator.

C = the angle at the centre of the moon's disc made by a meridian of the moon with the circle of declination, reckoned from north to east on the apparent disc.

i, Δ, ☊$'$, and ☾ are defined on the next page, where their values for the year are given.

λ, β, α', and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

λ' = the selenocentric longitude of the earth, reckoned on the moon's equator from its descending node, ☊.

$$\left.\begin{aligned} \Delta\lambda &= -0'.57 \sin 2 (\Omega - \lambda) \\ a &= \sin I \cos (\Omega - \lambda) \\ \tan B &= \tan I \sin (\Omega - \lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\, b \end{aligned}\right\} \text{See table, page 345.}$$

The libration in latitude $= b = B - \beta$,

" " longitude $= l = \lambda' - ☾$.

$$\sin C = \sin i \frac{\cos(\lambda' + \Delta - \Omega)}{\cos \delta'} = -\sin i \frac{\cos(\alpha' - \Omega')}{\cos b}.$$

WASHINGTON MEAN TIME

Mean Noon.		MOON'S EQUATOR.			☾ Moon's Mean Longitude.
		i Inclination to the Earth's Equator.	∆ Ascend'g Node on Earth's Equator to Ascending Node on Ecliptic.	☊' Ascend'g Node on Earth's Equator.	
Jan.	0	22° 47'.4	244° 26'.3	356° 38'.8	300° 48'.6
	10	22 46.6	243 53.7	356 39.7	72 34.5
	20	22 45.8	243 21.0	356 40.7	204 20.3
	30	22 45.0	242 48.4	356 41.6	336 6.1
Feb.	9	22 44.2	242 15.7	356 42.6	107 52.0
	19	22 43.5	241 43.0	356 43.6	239 37.8
March	1	22 42.7	241 10.4	356 44.6	11 23.6
	11	22 42.0	240 37.6	356 45.7	143 9.5
	21	22 41.3	240 4.9	356 46.7	274 55.3
	31	22 40.5	239 32.2	356 47.8	46 41.2
April	10	22 39.8	238 59.4	356 48.9	178 27.0
	20	22 39.1	238 26.6	356 50.0	310 12.8
	30	22 38.4	237 53.8	356 51.1	81 58.7
May	10	22 37.7	237 21.0	356 52.2	213 44.5
	20	22 37.0	236 48.2	356 53.4	345 30.3
	30	22 36.3	236 15.3	356 54.6	117 16.2
June	9	22 35.6	235 42.5	356 55.8	249 2.0
	19	22 34.9	235 9.6	356 57.0	20 47.9
	29	22 34.3	234 36.7	356 58.2	152 33.7
July	9	22 33.6	234 3.8	356 59.4	284 19.5
	19	22 33.0	233 30.9	357 0.7	56 5.4
	29	22 32.3	232 57.9	357 2.0	187 51.2
Aug.	8	22 31.6	232 25.0	357 3.3	319 37.1
	18	22 31.0	231 52.0	357 4.6	91 22.9
	28	22 30.4	231 19.0	357 5.9	223 8.7
Sept.	7	22 29.7	230 46.0	357 7.3	354 54.6
	17	22 29.1	230 13.0	357 8.6	126 40.4
	27	22 28.5	229 40.0	357 10.0	258 26.2
Oct.	7	22 27.8	229 6.9	357 11.4	30 12.1
	17	22 27.2	228 33.8	357 12.8	161 57.9
	27	22 26.6	228 0.8	357 14.2	293 43.8
Nov.	6	22 26.0	227 27.7	357 15.7	65 29.6
	16	22 25.4	226 54.5	357 17.1	197 15.4
	26	22 24.8	226 21.4	357 18.6	329 1.3
Dec.	6	22 24.2	225 48.3	357 20.1	100 47.1
	16	22 23.6	225 15.1	357 21.6	232 32.9
	26	22 23.0	224 42.0	357 23.1	4 18.8
	36	22 22.5	224 8.8	357 24.7	136 4.6

Mean Solar Days.	Motion of ☾.
0.1	1° 19'.06
0.2	2 38.12
0.3	3 57.18
0.4	5 16.23
0.5	6 35.29
0.6	7 54.35
0.7	9 13.41
0.8	10 32.47
0.9	11 51.53
1.0	13 10.58
2.0	26 21.17
3.0	39 31.75
4.0	52 42.33
5.0	65 52.92
6.0	79 3.50
7.0	92 14.09
8.0	105 24.67
9.0	118 35.25
10.0	131 45.84
Hours.	
1	0 32.94
2	1 5.88
3	1 38.82
4	2 11.76
5	2 44.70
6	3 17.65
7	3 50.59
8	4 23.53
9	4 56.47
10	5 29.41
11	6 2.35
12	6 35.29
13	7 8.23
14	7 41.17
15	8 14.11
16	8 47.06
17	9 20.00
18	9 52.94
19	10 25.88
20	10 58.82
21	11 31.76
22	12 4.70
23	12 37.64

TABLE FOR THE LIBRATION OF THE MOON.

Argument, (☊—λ) or (☊—λ—180°.)

☊—λ	Δ λ	a^{-1}	*B*	☊—λ	☊—λ	Δ λ	a^{-1}	*B*	☊—λ
0°	0'.0	39	0° 0'.0	180°	46°	0'.6	56	1° 3'.9	134°
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

Δ λ has the sign of tan (λ—☊)

a has the sign of cos (☊—λ)

B has the sign of sin (☊—λ)

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	17 9 40.91	+6.614	-20 28 30.6	-27.65	0 22 26.9	17 12 19.86	+7.528	-20 39 9.7	-29.18
1	17 12 31.60	7.592	20 39 55.2	29.30	1 22 26.2	17 15 31.37	8.415	20 51 5.3	30.34
2	17 15 44.57	8.473	20 51 52.8	30.41	2 22 25.8	17 19 3.11	9.216	21 3 22.1	30.99
3	17 19 17.62	9.267	21 4 10.8	31.02	3 22 25.7	17 22 53.10	9.938	21 15 49.1	31.19
4	17 23 8.76	9.982	21 16 38.1	31.19	4 22 25.8	17 26 59.55	10.588	21 28 16.1	30.98
5	17 27 16.19	10.625	21 29 4.6	30.95	5 22 26.2	17 31 20.84	11.175	21 40 33.6	30.42
6	17 31 38.32	11.207	21 41 21.0	30.36	6 22 26.9	17 35 55.54	11.706	21 52 33.7	29.54
7	17 36 13.72	11.733	21 53 19.4	29.46	7 22 27.7	17 40 42.36	12.187	22 4 9.3	28.38
8	17 41 1.11	12.208	22 4 52.8	28.28	8 22 28.7	17 45 40.16	12.623	22 15 13.9	26.96
9	17 45 59.36	12.639	22 15 54.8	26.85	9 22 29.9	17 50 47.93	13.019	22 25 41.8	25.32
10	17 51 7.47	13.031	22 26 19.7	25.19	10 22 31.2	17 56 4.78	13.379	22 35 27.9	23.48
11	17 56 24.56	13.388	22 36 2.5	23.34	11 22 32.7	18 1 29.88	13.707	22 44 27.7	21.47
12	18 1 49.81	13.712	22 44 58.8	21.32	12 22 34.3	18 7 2.50	14.007	22 52 37.3	19.30
13	18 7 22.50	14.008	22 53 4.7	19.14	13 22 36.0	18 12 42.01	14.282	22 59 53.0	16.98
14	18 13 2.00	14.280	23 0 16.6	16.82	14 22 37.8	18 18 27.86	14.534	23 6 11.4	14.53
15	18 18 47.75	14.529	23 6 31.2	14.37	15 22 39.7	18 24 19.50	14.765	23 11 29.7	11.97
16	18 24 39.23	14.757	23 11 45.6	11.81	16 22 41.7	18 30 16.44	14.976	23 15 45.4	9.31
17	18 30 35.95	14.966	23 15 57.4	9.15	17 22 43.8	18 36 18.24	15.171	23 18 56.1	6.56
18	18 36 37.48	15.159	23 19 4.3	6.40	18 22 46.0	18 42 24.54	15.352	23 20 59.6	3.72
19	18 42 43.46	15.337	23 21 4.1	3.57	19 22 48.2	18 48 35.01	15.518	23 21 54.1	- 0.81
20	18 48 53.55	15.501	23 21 55.0	- 0.66	20 22 50.5	18 54 49.29	15.670	23 21 37.8	+ 2.18
21	18 55 7.41	15.652	23 21 35.2	+ 2.32	21 22 52.9	19 1 7.06	15.810	23 20 9.1	5.23
22	19 1 24.73	15.791	23 20 3.2	5.36	22 22 55.3	19 7 28.08	15.940	23 17 26.6	8.33
23	19 7 45.26	15.919	23 17 17.6	8.45	23 22 57.7	19 13 52.10	16.060	23 13 29.0	11.48
24	19 14 8.75	16.037	23 13 17.1	11.60	24 23 0.2	19 20 18.87	16.170	23 8 15.0	14.69
25	19 20 34.96	16.146	23 8 0.4	14.80	25 23 2.7	19 26 48.17	16.272	23 1 43.6	17.94
26	19 27 3.67	16.247	23 1 26.4	18.04	26 23 5.3	19 33 19.81	16.365	22 53 53.7	21.22
27	19 33 34.70	16.339	22 53 34.3	21.31	27 23 7.9	19 39 53.61	16.451	22 44 44.4	24.55
28	19 40 7.86	16.424	22 44 23.0	24.63	28 23 10.6	19 46 29.39	16.530	22 34 14.8	27.92
29	19 46 42.98	16.502	22 33 51.7	27.98	29 23 13.3	19 53 7.00	16.603	22 22 24.0	31.31
30	19 53 19.91	16.574	22 21 59.5	31.36	30 23 15.9	19 59 46.30	16.670	22 9 11.5	34.73
31	19 59 58.51	16.641	22 8 46.0	34.77	31 23 18.7	20 6 27.16	16.733	21 54 36.6	38.18
Feb. 1	20 6 38.66	16.703	21 54 10.3	38.21	1 23 21.4	20 13 9.46	16.791	21 38 38.6	41.66
2	20 13 20.23	16.760	21 38 11.8	41.67	2 23 24.2	20 19 53.07	16.844	21 21 16.9	45.15
3	20 20 3.10	16.812	21 20 50.0	45.15	3 23 27.0	20 26 37 92	16.893	21 2 31.1	48.66
4	20 26 47.19	16.861	21 2 4.4	48.65	4 23 29.8	20 33 23.92	16.939	20 42 20.8	52.20
5	20 33 32.42	16.907	20 41 54.6	52.17	5 23 32.7	20 40 10.99	16.983	20 20 45.5	55.75
6	20 40 18.71	16.950	20 20 20.1	55.71	6 23 35.5	20 46 59.07	17.023	19 57 44.7	59.32
7	20 47 6.00	16.990	19 57 20.4	59.26	7 23 38.4	20 53 48.08	17.061	19 33 18.0	62.90
8	20 53 54.22	17.028	19 32 55.3	62.83	8 23 41.3	21 0 37.98	17.097	19 7 25.2	66.50
9	21 0 43.32	17.063	19 7 4.4	66.41	9 23 44.2	21 7 28.73	17.131	18 40 6.1	70.10
10	21 7 33.25	17.097	18 39 47.6	70.00	10 23 47.1	21 14 20.29	17.165	18 11 20.5	73.71
11	21 14 23.98	17.130	18 11 4.6	73.59	11 23 50.0	21 21 12.63	17.197	17 41 8.1	77.32
12	21 21 15.49	17.162	17 40 55.2	77.19	12 23 52.9	21 28 5.71	17.227	17 9 28.9	80.94
13	21 28 7.74	17.192	17 9 19.4	80.79	13 23 55.9	21 34 59.52	17.257	16 36 22.9	84.56
14	21 35 0.71	17.222	16 36 17.1	84.40	14 23 58.8	21 41 54.04	17.287	16 1 50.1	88.17
15	21 41 54.38	17.251	16 1 48.4	87.99					
16	21 48 48.74	17.279	15 25 53.6	91.57	16 0 1.8	21 48 49.26	17.315	15 25 50.8	91.76
17	21 55 43.76	17.306	14 48 33.1	95.13	17 0 4.8	21 55 45.14	17.342	14 48 25.5	95.34
18	22 2 39.40	17.331	14 9 47.4	98.67	18 0 7.8	22 2 41.64	17.367	14 9 34.6	98.90
19	22 9 35.63	17.354	13 29 37.0	102.19	19 0 10.8	22 9 38.74	17.390	13 29 18.6	102.43
20	22 16 32.40	17.375	12 48 2.7	105.66	20 0 13.8	22 16 36.39	17.412	12 47 38.4	105.91
21	22 23 29.65	17.394	12 5 5.9	109.06	21 0 16.8	22 23 34.52	17.431	12 4 35.4	109.33
22	22 30 27.30	17.409	11 20 48.2	112.40	22 0 19.8	22 30 33.05	17.446	11 20 11.1	112.68
23	22 37 25.25	17.419	10 35 11.3	115.66	23 0 22.8	22 37 31.88	17.456	10 34 27.3	115.95
24	22 44 23.34	17.421	9 48 17.5	118.81	24 0 25.9	22 44 30.85	17.458	9 47 26.3	119.11
25	22 51 21.40	17.415	9 0 9.7	121.82	25 0 28.9	22 51 29.79	17.451	8 59 11.0	122.14
26	22 58 19.19	17.399	8 10 51.3	124.68	26 0 31.9	22 58 28.45	17.435	8 9 44.9	125.01
27	23 5 16.44	17.370	7 20 26.6	127.35	27 0 34.9	23 5 26.56	17.405	7 19 12.4	127.68
28	23 12 12.79	17.324	6 29 0.5	129.79	28 0 38.0	23 12 23.74	17.358	6 27 38.4	130.12
29	23 19 7.81	17.258	5 36 38.8	131.97	29 0 40.9	23 19 19.57	17.291	5 35 8.8	132.30
30	23 26 0.98	17.168	- 4 43 28.4	+133.84	30 0 43.9	23 26 13.52	17.200	- 4 41 50.6	+134.16

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	23 19 7.81	17.258	- 5 36 38.8	+131.97	1 0 40.9	23 19 19.57	17.291	- 5 35 8.8	+132.30
2	23 26 0.98	17.168	4 43 28.4	133.84	2 0 43.9	23 26 13.52	17.200	4 41 50.6	134.16
3	23 32 51.67	17.051	3 49 37.3	135.36	3 0 46.8	23 33 4.96	17.081	3 47 51.8	135.67
4	23 39 39.16	16.901	2 55 14.5	136.47	4 0 49.7	23 39 53.14	16.928	2 53 21.7	136.77
5	23 46 22.59	16.712	2 0 30.7	137.11	5 0 52.4	23 46 37.19	16.736	1 58 30.9	137.39
6	23 53 0.98	16.480	1 5 37.3	137.24	6 0 55.1	23 53 16.12	16.501	1 3 31.2	137.49
7	23 59 33.25	16.200	- 0 10 47.5	136.81	7 0 57.7	23 59 48.83	16.216	- 0 8 35.9	137.02
8	0 5 58.15	15.866	+ 0 43 44.8	135.77	8 1 0.2	0 6 14.06	15.877	+ 0 46 0.9	135.93
9	0 12 14.33	15.473	1 37 44.2	134.07	9 1 2.5	0 12 30.44	15.479	1 40 3.7	134.19
10	0 18 20.34	15.018	2 30 54.6	131.68	10 1 4.6	0 18 36.51	15.018	2 33 16.3	131.75
11	0 24 14.65	14.497	3 22 59.1	128.58	11 1 6.6	0 24 30.74	14.490	3 25 21.8	128.59
12	0 29 55.65	13.908	4 13 40.7	124.76	12 1 8.4	0 30 11.49	13.894	4 16 2.8	124.70
13	0 35 21.70	13.251	5 2 42.0	120.22	13 1 9.9	0 35 37.12	13.229	5 5 1.9	120.09
14	0 40 31.17	12.526	5 49 45.7	114.97	14 1 11.0	0 40 45.99	12.497	5 52 1.7	114.78
15	0 45 22.44	11.735	6 34 35.3	109.05	15 1 11.9	0 45 36.49	11.699	6 36 45.8	108.79
16	0 49 53.94	10.880	7 16 54.9	102.48	16 1 12.5	0 50 7.06	10.838	7 18 58.4	102.16
17	0 54 4.21	9.966	7 56 29.2	95.30	17 1 12.7	0 54 16.26	9.919	7 58 24.4	94.93
18	0 57 51.89	8.998	8 33 4.4	87.55	18 1 12.5	0 58 2.74	8.946	8 34 50.0	87.13
19	1 1 15.75	7.982	9 6 27.5	79.29	19 1 12.0	1 1 25.30	7.926	9 8 2.3	78.82
20	1 4 14.73	6.926	9 36 26.7	70.57	20 1 11.0	1 4 22.90	6.867	9 37 49.9	70.07
21	1 6 47.96	5.838	10 2 51.5	61.43	21 1 9.6	1 6 54.70	5.778	10 4 2.4	60.91
22	1 8 54.76	4.726	10 25 32.4	51.92	22 1 7.7	1 9 0.06	4.667	10 26 30.7	51.40
23	1 10 34.67	3.690	10 44 21.4	42.11	23 1 5.4	1 10 38.57	3.543	10 45 7.0	41.59
24	1 11 47.51	2.471	10 59 11.9	32.05	24 1 2.7	1 11 50.07	2.417	10 59 45.1	31.54
25	1 12 33.34	1.351	11 9 58.7	21.81	25 0 59.5	1 12 34.66	1.302	11 10 20.0	21.33
26	1 12 52.54	+0.254	11 16 38.1	11.46	26 0 55.9	1 12 52.76	+0.211	11 16 48.5	11.03
27	1 12 45.82	-0.807	11 19 8.7	+ 1.10	27 0 51.8	1 12 45.11	-0.842	11 19 9.5	+ 0.73
28	1 12 14.22	1.817	11 17 31.4	- 9.18	28 0 47.3	1 12 12.77	1.843	11 17 24.1	- 9.48
29	1 11 19.14	2.761	11 11 49.6	19.26	29 0 42.5	1 11 17.17	2.778	11 11 35.8	19.48
30	1 10 2.35	3.624	11 2 9.5	29.01	30 0 37.3	1 10 0.09	3.631	11 1 51.3	29.14
31	1 8 25.97	4.392	10 48 41.0	38.27	31 0 31.8	1 8 23.64	4.390	10 48 20.6	38.32
Apr. 1	1 6 32.43	5.051	10 31 37.4	46.91	1 0 26.0	1 6 30.25	5.041	10 31 17.0	46.87
2	1 4 24.49	5.590	10 11 15.6	54.77	2 0 19.9	1 4 22.64	5.573	10 10 57.3	54.64
3	1 2 5.14	6.000	9 47 56.0	61.70	3 0 13.7	1 2 3.77	5.977	9 47 41.9	61.49
4	0 59 37.53	6.277	9 22 2.5	67.58	4 0 7.3	0 59 36.76	6.250	9 21 54.2	67.31
5	0 57 4.89	6.419	8 54 1.4	72.31	5 0 0.8	0 57 4.80	6.390	8 54 0.4	71.99
					5 23 54.3	0 54 31.10	6.399	8 24 28.7	75.46
6	0 54 30.49	6.427	8 24 21.5	75.81	6 23 47.9	0 51 58.76	6.289	7 53 48.7	77.68
7	0 51 57.48	6.306	7 53 32.9	78.04	7 23 41.5	0 49 30.74	6.040	7 22 30.3	78.65
8	0 49 28.87	6.062	7 22 5.9	79.00	8 23 35.2	0 47 9.81	5.690	6 51 3.3	78.41
9	0 47 7.45	5.707	6 50 30.8	78.73	9 23 29.1	0 44 58.43	5.244	6 19 56.1	77.02
10	0 44 55.72	5.255	6 19 16.3	77.30	10 23 23.2	0 42 58.75	4.717	5 49 35.0	74.59
11	0 42 55.85	4.721	5 48 49.0	74.81	11 23 17.5	0 41 12.57	4.121	5 20 23.8	71.21
12	0 41 9.65	4.118	5 19 33.2	71.37	12 23 12.0	0 39 41.39	3.470	4 52 43.7	67.01
13	0 39 38.62	3.460	4 51 50.0	67.11	13 23 6.8	0 38 26.36	2.777	4 26 52.6	62.13
14	0 38 23.90	2.761	4 25 57.5	62.16	14 23 1.9	0 37 28.39	2.057	4 3 5.4	56.71
15	0 37 26.31	2.034	4 2 10.5	56.67	15 22 57.3	0 36 47.76	1.320	3 41 33.7	50.86
16	0 36 46.38	1.291	3 40 40.6	50.76	16 22 53.0	0 36 25.02	-0.575	3 22 26.2	44.70
17	0 36 24.39	-0.542	3 21 36.4	44.54	17 22 49.0	0 36 20.16	+0.160	3 5 49.3	38.33
18	0 36 20.38	+0.206	3 5 4.1	38.12	18 22 45.3	0 36 33.08	0.905	2 51 47.0	31.85
19	0 36 34.23	0.945	2 51 7.5	31.59	19 22 41.9	0 37 3.52	1.628	2 40 21.1	25.32
20	0 37 5.66	1.670	2 39 48.3	25.02	20 22 38.7	0 37 51.09	2.333	2 31 31.7	18.81
21	0 37 54.27	2.377	2 31 6.4	18.48	21 22 35.9	0 38 55.33	3.017	2 25 17.6	12.38
22	0 38 59.59	3.062	2 25 0.5	12.03	22 22 33.3	0 40 15.71	3.678	2 21 36.6	- 6.06
23	0 40 21.06	3.723	2 21 28.2	- 5.69	23 22 30.9	0 41 51.66	4.315	2 20 25.7	+ 0.12
24	0 41 58.10	4.369	2 20 26.3	+ 0.50	24 22 28.8	0 43 42.61	4.927	2 21 41.1	6.13
25	0 43 50.13	4.972	2 21 50.7	6.51	25 22 27.0	0 45 47.97	5.514	2 25 18.4	11.93
26	0 45 56.56	5.559	2 25 37.2	12.33	26 22 25.4	0 48 7.15	6.078	2 31 13.1	17.58
27	0 48 16.78	6.121	2 31 41.1	17.96	27 22 24.0	0 50 39.57	6.619	2 39 20.4	23.00
28	0 50 50.20	6.660	2 39 57.5	23.38	28 22 22.8	0 53 24.70	7.138	2 49 35.4	28.22
29	0 53 36.29	7.177	2 50 21.5	28.59	29 22 21.8	0 56 22.01	7.635	3 1 53.3	33.23
30	0 56 34.53	+7.673	+ 3 2 48.0	+ 33.59	30 22 21.0	0 59 31.02	+8.113	+ 3 16 9.1	+ 38.05

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	0 59 44.43	+8.149	+ 3 17 12.2	+38.39	1 22 20.4	1 2 51.30	+8.574	+ 3 32 18.0	+42.67
2	1 3 5.56	8.608	3 33 29.1	42.99	2 22 20.0	1 6 22.45	9.019	3 50 15.3	47.08
3	1 6 37.51	9.051	3 51 34.0	47.39	3 22 19.8	1 10 4.10	9.450	4 9 56.2	51.30
4	1 10 19.91	9.480	4 11 22.1	51.59	4 22 19.7	1 13 55.91	9.867	4 31 16.2	55.34
5	1 14 12.43	9.896	4 32 48.9	55.61	5 22 19.8	1 17 57.61	10.274	4 54 10.8	59.19
6	1 18 14.80	10.301	4 55 49.9	59.45	6 22 20.0	1 22 8.99	10.672	5 18 35.9	62.87
7	1 22 26.80	10.697	5 20 20.9	63.11	7 22 20.4	1 26 29.84	11.063	5 44 27.3	66.38
8	1 26 48.22	11.086	5 46 17.7	66.60	8 22 21.0	1 30 59.99	11.448	6 11 40.9	69.72
9	1 31 18.90	11.470	6 13 36.2	69.91	9 22 21.7	1 35 39.34	11.829	6 40 12.7	72.89
10	1 35 58.74	11.849	6 42 12.3	73.06	10 22 22.5	1 40 27.80	12.208	7 9 58.6	75.90
11	1 40 47.65	12.226	7 12 2.0	76.05	11 22 23.5	1 45 25.34	12.586	7 40 54.8	78.74
12	1 45 45.59	12.602	7 43 1.4	78.87	12 22 24.7	1 50 31.97	12.965	8 12 57.2	81.42
13	1 50 52.57	12.979	8 15 6.4	81.52	13 22 26.0	1 55 47.71	13.346	8 46 1.9	83.93
14	1 56 8.62	13.358	8 48 13.2	84.01	14 22 27.5	2 1 12.63	13.730	9 20 4.9	86.28
15	2 1 33.79	13.740	9 22 17.8	86.34	15 22 29.1	2 6 46.82	14.119	9 55 2.2	88.46
16	2 7 8.19	14.127	9 57 16.1	88.49	16 22 30.9	2 12 30.41	14.514	10 30 49.6	90.46
17	2 12 51.95	14.520	10 33 3.8	90.46	17 22 32.8	2 18 23.57	14.917	11 7 22.7	92.27
18	2 18 45.23	14.921	11 9 36.6	92.24	18 22 34.9	2 24 26.49	15.328	11 44 37.1	93.89
19	2 24 48.20	15.329	11 46 50.0	93.84	19 22 37.2	2 30 39.37	15.747	12 22 27.9	95.31
20	2 31 1.07	15.746	12 24 39.2	95.23	20 22 39.6	2 37 2.43	16.176	13 0 50.1	96.51
21	2 37 24.07	16.172	13 2 59.1	96.40	21 22 42.2	2 43 35.93	16.617	13 39 38.3	97.47
22	2 43 57.43	16.610	13 41 44.3	97.33	22 22 45.0	2 50 20.12	17.068	14 18 46.5	98.18
23	2 50 41.41	17.057	14 20 48.9	98.01	23 22 48.0	2 57 15.26	17.529	14 58 8.6	98.61
24	2 57 36.25	17.515	15 0 6.7	98.42	24 22 51.1	3 4 21.58	18.000	15 37 37.7	98.75
25	3 4 42.19	17.981	15 39 30.8	98.53	25 22 54.5	3 11 39.30	18.479	16 17 6.5	98.57
26	3 11 59.43	18.457	16 18 53.8	98.32	26 22 58.0	3 19 8.62	18.966	16 56 26.7	98.04
27	3 19 28.17	18.939	16 58 7.6	97.76	27 23 1.8	3 26 49.70	19.458	17 35 29.6	97.13
28	3 27 8.55	19.426	17 37 3.5	96.83	28 23 5.7	3 34 42.64	19.952	18 14 5.9	95.82
29	3 35 0.65	19.915	18 15 32.3	95.50	29 23 9.8	3 42 47.41	20.445	18 52 5.5	94.07
30	3 43 4.46	20.402	18 53 23.9	93.73	30 23 14.2	3 51 3.92	20.930	19 29 17.5	91.85
31	3 51 19.87	20.881	19 30 27.5	91.49	31 23 18.7	3 59 31.95	21.403	20 5 30.4	89.14
June 1	3 59 46.65	21.348	20 6 31.6	88.77	1 23 23.4	4 8 11.14	21.858	20 40 32.2	85.92
2	4 8 24.44	21.797	20 41 24.5	85.55	2 23 28.3	4 17 0.98	22.289	21 14 10.6	82.19
3	4 17 12.73	22.222	21 14 53.9	81.82	3 23 33.3	4 26 0.77	22.687	21 46 13.0	77.93
4	4 26 10.83	22.614	21 46 47.5	77.57	4 23 38.5	4 35 9.63	23.045	22 16 27.0	73.15
5	4 35 17.87	22.966	22 16 53.1	72.81	5 23 43.8	4 44 26.54	23.356	22 44 40.5	67.88
6	4 44 32.83	23.272	22 44 58.7	67.57	6 23 49.2	4 53 50.30	23.614	23 10 42.1	62.17
7	4 53 54.53	23.526	23 10 53.2	61.89	7 23 54.7	5 3 19.55	23.813	23 34 21.4	56.05
8	5 3 21.63	23.722	23 34 26.3	55.81					
9	5 12 52.72	23.857	23 55 29.2	49.39	9 0 0.3	5 12 52.86	23.950	23 55 29.5	49.58
10	5 22 26.27	23.927	24 13 54.5	42.69	10 0 6.0	5 22 28.66	24.021	24 13 58.8	42.83
11	5 32 0.71	23.931	24 29 36.5	35.79	11 0 11.7	5 32 5.35	24.024	24 29 43.5	35.87
12	5 41 34.47	23.871	24 42 31.4	28.77	12 0 17.3	5 41 41.34	23.963	24 42 39.7	28.81
13	5 51 6.03	23.749	24 52 37.1	21.71	13 0 22.9	5 51 15.09	23.839	24 52 45.4	21.68
14	6 0 33.93	23.567	24 59 53.5	14.67	14 0 28.4	6 0 45.10	23.653	25 0 0.4	14.59
15	6 9 56.81	23.331	25 4 21.9	7.72	15 0 33.9	6 10 9.98	23.412	25 4 26.2	7.59
16	6 19 13.43	23.046	25 6 5.3	+ 0.92	16 0 39.3	6 19 28.49	23.122	25 6 5.8	+ 0.74
17	6 28 22.66	22.717	25 5 8.0	− 5.67	17 0 44.5	6 28 39.48	22.787	25 5 3.7	− 5.89
18	6 37 23.52	22.350	25 1 35.2	12.02	18 0 49.6	6 37 41.96	22.414	25 1 25.2	12.27
19	6 46 15.18	21.951	24 55 33.1	18.10	19 0 54.5	6 46 35.10	22.009	24 55 16.6	18.38
20	6 54 56.93	21.525	24 47 8.7	23.88	20 0 59.2	6 55 18.17	21.577	24 46 45.0	24.19
21	7 3 28.18	21.077	24 36 29.2	29.35	21 1 3.8	7 3 50.59	21.122	24 35 57.9	29.68
22	7 11 48.45	20.611	24 23 42.2	34.50	22 1 8.2	7 12 11.87	20.650	24 23 2.9	34.84
23	7 19 57.38	20.132	24 8 55.6	39.32	23 1 12.4	7 20 21.66	20.165	24 8 8.1	39.67
24	7 27 54.69	19.643	23 52 17.2	43.82	24 1 16.5	7 28 19.70	19.670	23 51 21.3	44.17
25	7 35 40.18	19.147	23 33 54.8	47.99	25 1 20.3	7 36 5.78	19.168	23 32 50.5	48.34
26	7 43 13.70	18.646	23 13 56.2	51.84	26 1 23.9	7 43 39.75	18.662	23 12 43.6	52.18
27	7 50 35.16	18.142	22 52 28.9	55.38	27 1 27.3	7 51 1.53	18.153	22 51 8.2	55.71
28	7 57 44.50	17.637	22 29 40.3	58.62	28 1 30.5	7 58 11.07	17.643	22 28 11.8	58.93
29	8 4 41.73	17.132	22 5 37.6	61.56	29 1 33.5	8 5 8.39	17.134	22 4 1.6	61.86
30	8 11 26.86	16.628	21 40 27.7	64.22	30 1 36.3	8 11 53.51	16.626	21 38 44.6	64.50
31	8 17 59.89	16.125	+21 14 17.4	−66.60	31 1 38.9	8 18 26.44	16.119	+21 12 27.6	−66.87

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	8 17 59.89	16.125	+21 14 17.4	−66.60	1 1 38.9	8 18 26.44	16.119	+21 12 27.6	−66.87
2	8 24 20.86	15.624	20 47 13.2	68.71	2 1 41.3	8 24 47.21	15.614	20 45 17.2	68.96
3	8 30 29.83	15.124	20 19 21.6	70.55	3 1 43.5	8 30 55.89	15.110	20 17 19.9	70.78
4	8 36 26.82	14.625	19 50 48.6	72.15	4 1 45.5	8 36 52.50	14.607	19 48 41.7	72.35
5	8 42 11.85	14.127	19 21 40.2	73.50	5 1 47.3	8 42 37.07	14.106	19 19 28.7	73.68
6	8 47 44.94	13.630	18 52 2.3	74.61	6 1 48.9	8 48 9.63	13.606	18 49 46.9	74.77
7	8 53 6.10	13.133	18 22 0.6	75.49	7 1 50.3	8 53 30.19	13.106	18 19 41.9	75.62
8	8 58 15.33	12.635	17 51 40.7	76.13	8 1 51.5	8 58 38.75	12.606	17 49 19.3	76.23
9	9 3 12.58	12.135	17 21 8.2	76.54	9 1 52.5	9 3 35.28	12.104	17 18 44.7	76.61
10	9 7 57.79	11.632	16 50 28.4	76.73	10 1 53.3	9 8 19.71	11.599	16 48 3.5	76.77
11	9 12 30.90	11.125	16 19 46.8	76.69	11 1 53.9	9 12 51.97	11.089	16 17 21.3	76.70
12	9 16 51.78	10.613	15 49 8.9	76.42	12 1 54.3	9 17 11.94	10.574	15 46 43.4	76.41
13	9 21 0.29	10.095	15 18 40.2	75.93	13 1 54.4	9 21 19.49	10.054	15 16 15.4	75.89
14	9 24 56.27	9.569	14 48 26.1	75.20	14 1 54.4	9 25 14.47	9.526	14 46 2.7	75.13
15	9 28 39.53	9.034	14 18 32.3	74.24	15 1 54.2	9 28 56.68	8.989	14 16 11.1	74.13
16	9 32 9.82	8.488	13 49 4.5	73.04	16 1 53.7	9 32 25.87	8.441	13 46 46.2	72.90
17	9 35 26.85	7.930	13 20 8.5	71.59	17 1 53.0	9 35 41.75	7.881	13 17 53.8	71.42
18	9 38 30.33	7.358	12 51 50.4	69.88	18 1 52.1	9 38 44.04	7.308	12 49 40.0	69.69
19	9 41 19.92	6.771	12 24 16.4	67.91	19 1 51.0	9 41 32.40	6.719	12 22 10.9	67.69
20	9 43 55.22	6.168	11 57 32.9	65.67	20 1 49.6	9 44 6.45	6.115	11 55 33.0	65.42
21	9 46 15.83	5.547	11 31 46.6	63.15	21 1 48.0	9 46 25.78	5.493	11 29 53.0	62.87
22	9 48 21.33	4.908	11 7 4.3	60.33	22 1 46.1	9 48 29.97	4.853	11 5 17.7	60.02
23	9 50 11.24	4.248	10 43 33.5	57.19	23 1 44.0	9 50 18.56	4.193	10 41 54.5	56.86
24	9 51 45.07	3.568	10 21 21.7	53.74	24 1 41.6	9 51 51.08	3.513	10 19 50.9	53.39
25	9 53 2.34	2.868	10 0 36.4	49.97	25 1 38.9	9 53 7.04	2.814	9 59 14.2	49.60
26	9 54 2.56	2.148	9 41 25.7	45.86	26 1 36.0	9 54 5.97	2.095	9 40 12.5	45.48
27	9 54 45.26	1.408	9 23 57.8	41.41	27 1 32.8	9 54 47.41	1.357	9 22 54.0	41.02
28	9 55 9.98	+0.650	9 8 20.9	36.61	28 1 29.2	9 55 10.92	+0.601	9 7 26.7	36.21
29	9 55 16.33	−0.122	8 54 43.4	31.46	29 1 25.3	9 55 16.13	−0.168	8 53 58.8	31.06
30	9 55 4.02	0.905	8 43 13.6	25.97	30 1 21.2	9 55 2.77	0.946	8 42 38.6	25.58
31	9 54 32.84	1.693	8 33 59.4	20.16	31 1 16.8	9 54 30.65	1.729	8 33 33.8	19.78
Aug. 1	9 53 42.75	2.480	8 27 8.4	14.05	1 1 12.0	9 53 39.75	2.511	8 26 51.7	13.69
2	9 52 33.87	3.258	8 22 47.3	7.68	2 1 6.9	9 52 30.22	3.282	8 22 38.9	7.35
3	9 51 6.54	4.016	8 21 1.8	− 1.09	3 1 1.5	9 51 2.41	4.032	8 21 0.8	− 0.80
4	9 49 21.37	4.742	8 21 56.4	+ 5.65	4 0 55.8	9 49 16.95	4.750	8 22 1.8	+ 5.89
5	9 47 19.28	5.424	8 25 33.8	12.47	5 0 49.9	9 47 14.77	5.424	8 25 44.3	12.65
6	9 45 1.49	6.048	8 31 54.6	19.26	6 0 43.7	9 44 57.09	6.039	8 32 8.7	19.38
7	9 42 29.59	6.597	8 40 57.1	25.93	7 0 37.2	9 42 25.50	6.580	8 41 13.2	25.98
8	9 39 45.56	7.056	8 52 37.1	32.36	8 0 30.5	9 39 41.97	7.032	8 52 53.6	32.34
9	9 36 51.74	7.410	9 6 47.5	38.43	9 0 23.7	9 36 48.81	7.380	9 7 2.7	38.34
10	9 33 50.85	7.643	9 23 17.8	44.01	10 0 16.8	9 33 48.71	7.609	9 23 30.1	43.85
11	9 30 45.94	7.743	9 41 54.8	48.97	11 0 9.8	9 30 44.67	7.706	9 42 2.8	48.76
12	9 27 40.33	7.700	10 2 22.6	53.21	12 0 2.8	9 27 39.96	7.663	10 2 25.1	52.96
					12 23 55.8	9 24 38.06	7.472	10 24 18.7	56.36
13	9 24 37.54	7.507	10 24 22.6	56.64	13 23 49.0	9 21 42.55	7.130	10 47 23.5	58.89
14	9 21 41.23	7.160	10 47 34.3	59.18	14 23 42.3	9 18 57.03	6.639	11 11 17.8	60.49
15	9 18 55.06	6.662	11 11 35.7	60.78	15 23 35.8	9 16 25.03	6.003	11 35 39.1	61.13
16	9 16 22.60	6.018	11 36 3.8	61.40	16 23 29.6	9 14 9.97	5.230	12 0 4.4	60.82
17	9 14 7.31	5.234	12 0 35.3	61.06	17 23 23.8	9 12 14.99	4.331	12 24 11.1	59.58
18	9 12 12.37	4.324	12 24 47.1	59.77	18 23 18.4	9 10 42.95	3.321	12 47 37.0	57.44
19	9 10 40.65	3.302	12 48 16.9	57.57	19 23 13.3	9 9 36.36	2.214	13 10 1.0	54.44
20	9 9 34.65	2.184	13 10 43.4	54.51	20 23 8.7	9 8 57.31	−1.028	13 31 3.3	50.64
21	9 8 56.45	−0.988	13 31 46.6	50.64	21 23 4.7	9 8 47.48	+0.218	13 50 25.4	46.10
22	9 8 47.71	+0.268	13 51 8.0	46.03	22 23 1.1	9 9 8.15	1.509	14 7 50.4	40.89
23	9 9 9.67	1.566	14 8 30.6	40.75	23 22 58.0	9 10 0.15	2.827	14 23 2.9	35.07
24	9 10 3.11	2.889	14 23 39.1	34.87	24 22 55.5	9 11 23.92	4.155	14 35 49.0	28.69
25	9 11 28.43	4.221	14 36 19.7	28.44	25 22 53.5	9 13 19.51	5.476	14 45 56.2	21.83
26	9 13 25.63	5.543	14 46 20.3	21.53	26 22 52.0	9 15 46.57	6.775	14 53 13.7	14.55
27	9 15 54.30	6.841	14 53 30.0	14.21	27 22 51.0	9 18 44.43	8.040	14 57 32.2	+ 6.92
28	9 18 53.73	8.103	14 57 39.8	+ 6.55	28 22 50.5	9 22 12.10	9.257	14 58 43.8	− 1.00
29	9 22 22.87	9.315	14 58 42.3	− 1.39	29 22 50.5	9 26 8.28	10.414	14 56 42.4	9.15
30	9 26 20.37	10.465	14 56 31.5	9.54	30 22 51.0	9 30 31.38	11.499	14 51 23.6	17.44
31	9 30 44.63	11.543	+14 51 3.2	−17.83	31 22 51.8	9 35 19.57	12.503	+14 42 44.9	−25.79

MERCURY, 1873.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1873.	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	9 35 33.79	12.539	+14 42 15.4	-26.16	1 22 53.0	9 40 30.84	13.421	+14 30 46.1	-34.10
2	9 40 45.82	13.448	14 30 7.9	34.45	2 22 54.6	9 46 3.03	14.246	14 15 28.9	42.30
3	9 46 18.55	14.264	14 14 42.6	42.62	3 22 56.5	9 51 53.86	14.973	13 56 57.0	50.31
4	9 52 9.69	14.982	13 56 3.6	50.59	4 22 58.7	9 58 0.97	15.602	13 35 16.1	58.04
5	9 58 16.90	15.602	13 34 16.7	58.27	5 23 1.1	10 4 22.01	16.134	13 10 34.0	65.40
6	10 4 37.83	16.126	13 9 29.7	65.58	6 23 3.7	10 10 54.68	16.572	12 43 0.0	72.34
7	10 11 10.21	16.557	12 41 52.1	72.47	7 23 6.4	10 17 36.77	16.921	12 12 45.0	78.82
8	10 17 51.85	16.899	12 11 34.7	78.90	8 23 9.3	10 24 26.21	17.186	11 40 0.7	84.78
9	10 24 40.70	17.159	11 38 49.2	84.81	9 23 12.3	10 31 21.09	17.375	11 4 59.8	90.20
10	10 31 34.88	17.344	11 3 48.2	90.18	10 23 15.3	10 38 19.69	17.497	10 27 55.3	95.08
11	10 38 32.69	17.463	10 26 44.7	95.02	11 23 18.3	10 45 20.49	17.560	9 49 0.3	99.41
12	10 45 32.64	17.524	9 47 51.5	99.32	12 23 21.4	10 52 22.17	17.572	9 8 27.5	103.22
13	10 52 33.43	17.535	9 7 21.3	103.10	13 23 24.5	10 59 23.62	17.542	8 26 29.5	106.52
14	10 59 33.97	17.504	8 25 26.6	106.37	14 23 27.6	11 6 23.93	17.478	7 43 18.3	109.33
15	11 6 33.36	17.439	7 42 19.3	109.16	15 23 30.6	11 13 22.34	17.386	6 59 4.8	111.70
16	11 13 30.84	17.347	6 58 10.2	111.51	16 23 33.6	11 20 18.25	17.271	6 13 59.6	113.65
17	11 20 25.83	17.233	6 13 9.7	113.45	17 23 36.5	11 27 11.21	17.140	5 28 12.4	115.22
18	11 27 17.90	17.103	5 27 27.4	115.01	18 23 39.4	11 34 0.89	16.998	4 41 51.8	116.44
19	11 34 6.71	16.962	4 41 11.9	116.22	19 23 42.2	11 40 47.06	16.848	3 55 5.9	117.34
20	11 40 52.04	16.814	3 54 31.2	117.12	20 23 45.0	11 47 29.59	16.695	3 8 1.7	117.96
21	11 47 33.76	16.662	3 7 32.2	117.74	21 23 47.7	11 54 8.40	16.540	2 20 45.9	118.32
22	11 54 11.79	16.508	2 20 21.6	118.10	22 23 50.3	12 0 43.49	16.385	1 33 24.2	118.45
23	12 0 46.13	16.355	1 33 5.1	118.24	23 23 52.9	12 7 14.90	16.233	+0 46 1.8	118.38
24	12 7 16.82	16.204	+ 0 45 47.8	118.17	24 23 55.4	12 13 42.71	16.085	–0 1 16.6	118.13
25	12 13 43.94	16.057	– 0 1 25.6	117.92	25 23 57.8	12 20 7.03	15.942	0 48 26.7	117.70
26	12 20 7.60	15.915	0 48 30.9	117.50					
27	12 26 27.92	15.779	1 35 24.3	116.93	27 0 0.2	12 26 27.99	15.805	1 35 24.8	117.12
28	12 32 45.06	15.650	2 22 2.5	116.23	28 0 2.6	12 32 45.74	15.675	2 22 7.5	116.41
29	12 38 59.18	15.528	3 8 22.5	115.41	29 0 4.9	12 39 0.44	15.552	3 8 31.9	115.59
30	12 45 10.44	15.412	3 54 21.5	114.49	30 0 7.1	12 45 12.27	15.435	3 54 35.1	114.66
Oct. 1	12 51 19.02	15.304	4 39 57.2	113.47	1 0 9.3	12 51 21.40	15.326	4 40 14.8	113.63
2	12 57 25.10	15.204	5 25 7.4	112.36	2 0 11.5	12 57 28.01	15.225	5 25 28.9	112.52
3	13 3 28.85	15.111	6 9 50.0	111.17	3 0 13.6	13 3 32.28	15.132	6 10 15.2	111.32
4	13 9 30.46	15.025	6 54 3.0	109.90	4 0 15.7	13 9 34.40	15.046	6 54 31.8	110.05
5	13 15 30.10	14.946	7 37 44.8	108.57	5 0 17.8	13 15 34.53	14.967	7 38 17.0	108.71
6	13 21 27.94	14.874	8 20 53.8	107.17	6 0 19.8	13 21 32.85	14.894	8 21 29.2	107.30
7	13 27 24.13	14.809	9 3 28.5	105.71	7 0 21.8	13 27 29.51	14.828	9 4 6.9	105.83
8	13 33 18.83	14.750	9 45 27.4	104.19	8 0 23.8	13 33 24.67	14.769	9 46 8.7	104.31
9	13 39 12.19	14.697	10 26 49.2	102.62	9 0 25.7	13 39 18.49	14.716	10 27 33.2	102.73
10	13 45 4.36	14.651	11 7 32.7	101.00	10 0 27.6	13 45 11.12	14.669	11 8 19.2	101.10
11	13 50 55.48	14.610	11 47 36.6	99.32	11 0 29.5	13 51 2.68	14.627	11 48 25.5	99.42
12	13 56 45.65	14.572	12 26 59.6	97.59	12 0 31.4	13 56 53.29	14.590	12 27 50.7	97.68
13	14 2 34.98	14.539	13 5 40.4	95.81	13 0 33.3	14 2 43.06	14.558	13 6 33.6	95.89
14	14 8 23.57	14.510	13 43 37.9	93.98	14 0 35.2	14 8 32.09	14.529	13 44 33.0	94.06
15	14 14 11.52	14.485	14 20 50.9	92.10	15 0 37.1	14 14 20.46	14.503	14 21 47.8	92.17
16	14 19 58.89	14.462	14 57 18.1	90.17	16 0 38.9	14 20 8.25	14.480	14 58 16.6	90.23
17	14 25 45.73	14.441	15 32 58.3	88.18	17 0 40.7	14 25 55.53	14.459	15 33 58.2	88.24
18	14 31 32.10	14.422	16 7 50.2	86.14	18 0 42.6	14 31 42.33	14.440	16 8 51.3	86.19
19	14 37 18.01	14.403	16 41 52.5	84.05	19 0 44.4	14 37 28.67	14.421	16 42 54.7	84.09
20	14 43 3.46	14.384	17 15 3.9	81.90	20 0 46.2	14 43 14.54	14.401	17 16 7.0	81.93
21	14 48 48.44	14.364	17 47 23.1	79.69	21 0 48.0	14 48 59.93	14.381	17 48 26.8	79.71
22	14 54 32.92	14.342	18 18 48.5	77.42	22 0 49.8	14 54 44.82	14.359	18 19 52.7	77.43
23	15 0 16.82	14.316	18 49 18.8	75.09	23 0 51.6	15 0 29.13	14.333	18 50 23.3	75.10
24	15 6 0.06	14.286	19 18 52.4	72.70	24 0 53.4	15 6 12.77	14.302	19 19 57.0	72.70
25	15 11 42.51	14.250	19 47 27.8	70.24	25 0 55.2	15 11 55.61	14.266	19 48 32.3	70.23
26	15 17 24.02	14.207	20 15 3.4	67.71	26 0 57.0	15 17 37.50	14.223	20 16 7.6	67.69
27	15 23 4.40	14.156	20 41 37.5	65.12	27 0 58.7	15 23 18.24	14.171	20 42 41.1	65.09
28	15 28 43.43	14.094	21 7 8.5	62.45	28 1 0.4	15 28 57.60	14.108	21 8 11.2	62.41
29	15 34 20.81	14.019	21 31 34.5	59.70	29 1 2.1	15 34 35.30	14.032	21 32 36.1	59.65
30	15 39 56.22	13.929	21 54 53.6	56.88	30 1 3.7	15 40 11.00	13.941	21 55 53.8	56.82
31	15 45 29.27	13.822	22 17 3.9	53.97	31 1 5.3	15 45 44.31	13.832	22 18 2.5	53.90
32	15 50 59.52	13.695	–22 38 3.5	–50.98	32 1 6.9	15 51 14.78	13.703	-22 39 0.2	–50.89

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	15 50 59.52	13.695	-22 38 3.5	-50.98	1 1 6.9	15 51 14.78	13.703	-22 39 0.2	-50.89
2	15 56 26.44	13.544	22 57 50.2	47.90	2 1 8.4	15 56 41.87	13.550	22 58 44.7	47.80
3	16 1 49.43	13.367	23 16 22.0	44.73	3 1 9.8	16 2 4.97	13.370	23 17 14.0	44.62
4	16 7 7.79	13.158	23 33 36.7	41.47	4 1 11.2	16 7 23.38	13.159	23 34 25.8	41.34
5	16 12 20.72	12.913	23 49 31.9	38.11	5 1 12.4	16 12 36.30	12.911	23 50 17.8	37.97
6	16 17 27.31	12.628	24 4 5.2	34.65	6 1 13.6	16 17 42.79	12.622	24 4 47.6	34.50
7	16 22 26.52	12.297	24 17 14.2	31.08	7 1 14.6	16 22 41.80	12.287	24 17 52.8	30.91
8	16 27 17.16	11.913	24 28 56.2	27.40	8 1 15.5	16 27 32.14	11.898	24 29 30.6	27.22
9	16 31 57.88	11.469	24 39 8.2	23.59	9 1 16.3	16 32 12.44	11.449	24 39 38.1	23.40
10	16 36 27.15	10.958	24 47 47.4	19.66	10 1 16.8	16 36 41.16	10.932	24 48 12.6	19.46
11	16 40 43.26	10.371	24 54 51.1	15.61	11 1 17.1	16 40 56.56	10.339	24 55 11.1	15.39
12	16 44 44.26	9.698	25 0 15.7	11.41	12 1 17.2	16 44 56.70	9.659	25 0 30.2	11.18
13	16 48 27.98	8.929	25 3 57.5	7.05	13 1 17.0	16 48 39.40	8.883	25 4 6.3	6.81
14	16 51 52.01	8.055	25 5 52.7	- 2.52	14 1 16.4	16 52 2.23	8.001	25 5 55.7	- 2.27
15	16 54 53.69	7.065	25 5 57.1	+ 2.19	15 1 15.4	16 55 2.54	7.004	25 5 54.1	+ 2.44
16	16 57 30.14	5.951	25 4 6.1	7.10	16 1 14.0	16 57 37.45	5.884	25 3 57.1	7.35
17	16 59 38.27	4.704	25 0 14.5	12.24	17 1 12.2	16 59 43.89	4.632	24 59 59.5	12.48
18	17 1 14.82	3.319	24 54 16.6	17.63	18 1 9.9	17 1 18.65	3.243	24 53 55.8	17.86
19	17 2 16.46	1.795	24 46 6.1	23.29	19 1 7.0	17 2 18.44	1.717	24 45 39.9	23.50
20	17 2 39.92	+0.139	24 35 36.4	29.23	20 1 3.4	17 2 40.04	+0.063	24 35 5.4	29.41
21	17 2 22.18	-1.635	24 22 40.9	35.44	21 0 59.1	17 2 20.54	-1.705	24 22 5.9	35.58
22	17 1 20.72	3.500	24 7 13.2	41.91	22 0 54.1	17 1 17.54	3.558	24 6 35.3	41.99
23	16 59 33.82	5.414	23 49 8.0	48.55	23 0 48.4	16 59 29.44	5.455	23 48 28.8	48.57
24	16 57 0.95	7.320	23 28 22.4	55.25	24 0 41.9	16 56 55.82	7.339	23 27 43.8	55.18
25	16 53 43.13	9.145	23 4 57.6	61.78	25 0 34.7	16 53 37.83	9.139	23 4 21.9	61.61
26	16 49 43.31	10.804	22 39 0.8	67.86	26 0 26.8	16 49 38.48	10.771	22 38 30.5	67.58
27	16 45 6.59	12.205	22 10 47.2	73.11	27 0 18.3	16 45 2.87	12.146	22 10 24.9	72.72
28	16 40 0.24	13.258	21 40 41.7	77.10	28 0 9.3	16 39 58.19	13.179	21 40 29.8	76.63
29	16 34 33.52	13.891	21 9 19.7	79.40	29 0 0.0	16 34 33.53	13.800	21 9 19.8	78.88
					29 23 50.5	16 28 59.37	13.965	20 37 39.2	79.13
30	16 28 57.14	14.058	20 37 26.5	79.65	30 23 41.0	16 23 26.87	13.663	20 6 19.0	77.17
Dec. 1	16 23 22.52	13.746	20 5 54.3	77.63	1 23 31.8	16 18 7.03	12.918	19 36 12.9	72.95
2	16 18 0.91	12.981	19 35 38.3	73.30	2 23 22.9	16 13 9.87	11.784	19 8 13.9	66 63
3	16 13 2.54	11.821	19 7 32.5	66.84	3 23 14.5	16 8 43.85	10.338	18 43 8.5	58.55
4	16 8 35.99	10.346	18 42 24.0	58.60	4 23 6.8	16 4 55.42	8.667	18 21 33.5	49.18
5	16 4 47.73	8.646	18 20 49.8	49.07	5 22 59.8	16 1 48.93	6.858	18 3 54.1	39.01
6	16 1 42.05	6.812	18 3 15.0	38.75	6 22 53.5	15 59 26.67	4.993	17 50 23.8	28.51
7	15 59 21.16	4.926	17 49 52.4	28.14	7 22 47.9	15 57 49.21	3.135	17 41 4.6	18.13
8	15 57 45.50	3.053	17 40 43.2	17.68	8 22 43.1	15 56 55.75	-1.333	17 35 49.8	+ 8.20
9	15 56 54.12	-1.243	17 35 39.8	+ 7.71	9 22 39.0	15 56 44.46	+0.375	17 34 25.2	- 1.02
10	15 56 45.05	+0.469	17 34 27.1	- 1.52	10 22 35.5	15 57 12.82	1.968	17 36 32.1	9.39
11	15 57 15.67	2.062	17 36 45.8	9.87	11 22 32.7	15 58 17.91	3.435	17 41 48.5	16.81
12	15 58 22.99	3.526	17 42 13.4	17.26	12 22 30.4	15 59 56.68	4.774	17 49 51.4	23.27
13	16 0 3.89	4.860	17 50 26.5	23.67	13 22 28.6	16 2 6.05	5.986	18 0 18.0	28.77
14	16 2 15.24	6.065	18 1 2.1	29.12	14 22 27.3	16 4 43.06	7.078	18 12 45.6	33.37
15	16 4 54.06	7.150	18 13 37.4	33.66	15 22 26.4	16 7 44.93	8.060	18 26 53.2	37.13
16	16 7 57.56	8.124	18 27 51.3	37.36	16 22 25.8	16 11 9.11	8.939	18 42 21.4	40.10
17	16 11 23.18	8.995	18 43 24.4	40.28	17 22 25.6	16 14 53.26	9.725	18 58 52.4	42.37
18	16 15 8.59	9.774	18 59 59.1	42.50	18 22 25.7	16 18 55.27	10.430	19 16 10.3	44.02
19	16 19 11.69	10.472	19 17 19.5	44.10	19 22 26.1	16 23 13.30	11.062	19 34 0.6	45.09
20	16 23 30.64	11.097	19 35 11.2	45.13	20 22 26.7	16 27 45.70	11.628	19 52 10.6	45.66
21	16 28 3.80	11.657	19 53 21.6	45.66	21 22 27.5	16 32 30.99	12.137	20 10 29.0	45.79
22	16 32 49.71	12.160	20 11 39.6	45.76	22 22 28.5	16 37 27.88	12.596	20 28 45.7	45.53
23	16 37 47.09	12.614	20 29 55.1	45.47	23 22 29.7	16 42 35.24	13.010	20 46 51.8	44.93
24	16 42 54.82	13.023	20 47 59.4	44.84	24 22 31.0	16 47 52.05	13.385	21 4 39.6	44.01
25	16 48 11.90	13.394	21 5 44.8	43.90	25 22 32.5	16 53 17.46	13.727	21 22 2.0	42.82
26	16 53 37.48	13.732	21 23 4.4	42.69	26 22 34.1	16 58 50.71	14.039	21 38 52.9	41.39
27	16 59 10.80	14.040	21 39 52.1	41.25	27 22 35.8	17 4 31.10	14.323	21 55 6.9	39.75
28	17 4 51.18	14.321	21 56 2.6	39.69	28 22 37.6	17 10 18.02	14.584	22 10 39.3	37.92
29	17 10 38.02	14.579	22 11 31.2	37.76	29 22 39.6	17 16 10.95	14.824	22 25 25.5	35.91
30	17 16 30.80	14.816	22 26 13.5	35.75	30 22 41.6	17 22 9.42	15.046	22 39 21 6	33.75
31	17 22 29.06	15.036	-22 40 5.6	-33.58	31 22 43.7	17 28 13.02	15.251	-22 52 24.3	-31.45

VENUS, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	21 41 1.01	11.609	−15 45 30.3	+62.79	1 2 55.4	21 41 34.94	11.607	−15 42 26.5	+62.94
2	21 45 38.86	11.544	15 20 11.4	63.76	2 2 56.1	21 46 12.73	11.542	15 17 4.0	63.91
3	21 50 15.14	11.479	14 54 29.8	64.70	3 2 56.8	21 50 48.95	11.476	14 51 19.0	64.84
4	21 54 49.86	11.414	14 28 26.2	65.60	4 2 57.4	21 55 23.60	11.411	14 25 12.1	65.73
5	21 59 23.04	11.350	14 2 1.5	66.46	5 2 58.0	21 59 56.70	11.347	13 58 44.1	66.59
6	22 3 54.68	11.287	13 35 16.4	67.29	6 2 58.6	22 4 28.26	11.284	13 31 55.9	67.41
7	22 8 24.80	11.224	13 8 11.8	68.09	7 2 59.2	22 8 58.31	11.220	13 4 48.3	68.21
8	22 12 53.42	11.161	12 40 48.5	68.85	8 2 59.7	22 13 26.84	11.157	12 37 22.1	68.97
9	22 17 20.54	11.099	12 13 7.3	69.58	9 3 0.2	22 17 53.87	11.095	12 9 38.2	69.69
10	22 21 46.20	11.039	11 45 9.0	70.28	10 3 0.7	22 22 19.43	11.035	11 41 37.3	70.38
11	22 26 10.41	10.979	11 16 54.4	70.94	11 3 1.1	22 26 43.53	10.975	11 13 20.2	71.04
12	22 30 33.18	10.918	10 48 24.2	71.57	12 3 1.5	22 31 6.21	10.915	10 44 47.6	71.66
13	22 34 54.55	10.860	10 19 39.4	72.16	13 3 2.0	22 35 27.48	10.856	10 16 0.5	72.26
14	22 39 14.51	10.802	9 50 40.7	72.73	14 3 2.4	22 39 47.33	10.798	9 46 59.6	72.82
15	22 43 33.08	10.746	9 21 28.9	73.25	15 3 2.7	22 44 5.79	10.741	9 17 45.7	73.34
16	22 47 50.32	10.690	8 52 4.6	73.75	16 3 3.0	22 48 22.92	10.685	8 48 19.4	73.83
17	22 52 6.24	10.637	8 22 28.9	74.22	17 3 3.4	22 52 38.74	10.632	8 18 41.9	74.29
18	22 56 20.88	10.584	7 52 42.3	74.67	18 3 3.7	22 57 53.27	10.579	7 48 53.7	74.74
19	23 0 34.26	10.531	7 22 45.1	75.08	19 3 4.0	23 1 6.54	10.526	7 18 54.9	75.14
20	23 4 46.40	10.480	6 52 38.3	75.46	20 3 4.2	23 5 18.57	10.475	6 48 46.6	75.52
21	23 8 57.32	10.430	6 22 23.0	75.81	21 3 4.4	23 9 29.38	10.425	6 18 29.9	75.86
22	23 13 7.05	10.381	5 51 59.7	76.12	22 3 4.7	23 13 39.00	10.376	5 48 5.3	76.17
23	23 17 15.60	10.332	5 21 29.2	76.41	23 3 4.9	23 17 47.44	10.327	5 17 33.7	76.45
24	23 21 23.02	10.285	4 50 52.2	76.67	24 3 5.1	23 21 54.73	10.280	5 46 55.7	76.71
25	23 25 29.30	10.239	4 20 9.4	76.89	25 3 5.2	23 26 0.89	10.234	4 16 12.0	76.92
26	23 29 34.48	10.193	3 49 21.6	77.09	26 3 5.4	23 30 5.96	10.188	3 45 23.5	77.12
27	23 33 38.58	10.148	3 18 29.4	77.25	27 3 5.5	23 34 9.94	10.143	3 14 30.6	77.27
28	23 37 41.60	10.104	2 47 33.6	77.39	28 3 5.6	23 38 12.84	10.099	2 43 34.3	77.40
29	23 41 43.56	10.060	2 16 35.0	77.49	29 3 5.7	23 42 14.68	10.055	2 12 35.2	77.50
30	23 45 44.48	10.017	1 45 34.2	77.57	30 3 5.8	23 46 15.47	10.012	1 41 34.1	77.57
31	23 49 44.38	9.975	1 14 32.0	77.61	31 3 5.8	23 50 15.25	9.970	1 10 31.7	77.61
Feb. 1	23 53 43.26	9.933	0 43 29.1	77.62	1 3 5.8	23 54 14.01	9.928	0 39 28.7	77.62
2	23 57 41.13	9.891	− 0 12 26.3	77.60	2 3 5.9	23 58 11.75	9.886	− 0 8 26.0	77.60
3	0 1 38.00	9.850	+ 0 18 35.6	77.55	3 3 5.9	0 2 8.50	9.845	+ 0 22 35.8	77.54
4	0 5 33.87	9.809	0 49 36.0	77.47	4 3 5.8	0 6 4.24	9.804	0 53 35.9	77.45
5	0 9 28.76	9.768	1 20 34.1	77.37	5 3 5.8	0 9 59.00	9.762	1 24 33.6	77.35
6	0 13 22.69	9.727	1 51 29.3	77.23	6 3 5.8	0 14 52.79	9.721	1 55 28.4	77.21
7	0 17 15.65	9.687	2 22 20.7	77.05	7 3 5.7	0 17 45.62	9.681	2 26 19.2	77.03
8	0 21 7.64	9.647	2 53 7.7	76.85	8 3 5.6	0 21 37.48	9.641	2 57 5.5	76.82
9	0 24 58.67	9.606	3 23 49.5	76.63	9 3 5.5	0 25 28.37	9.600	3 27 46.5	76.59
10	0 28 48.73	9.566	3 54 25.6	76.37	10 3 5.4	0 29 18.28	9.560	3 58 21.6	76.33
11	0 32 37.83	9.526	4 24 55.2	76.08	11 3 5.3	0 33 7.24	9.520	4 28 50.2	76.03
12	0 36 25.97	9.486	4 55 17.4	75.76	12 3 5.2	0 36 55.23	9.479	4 59 11.2	75.72
13	0 40 13.14	9.445	5 25 31.7	75.42	13 3 5.0	0 40 42.25	9.448	5 29 24.3	75.36
14	0 43 59.36	9.405	5 55 37.7	75.06	14 3 4.8	0 44 28.32	9.438	5 59 28.9	75.00
15	0 47 44.62	9.364	6 25 34.6	74.67	15 3 4.6	0 48 13.42	9.357	6 29 24.4	74.60
16	0 51 28.91	9.324	6 55 21.7	74.25	16 3 4 4	0 51 57.55	9.317	6 59 9.9	74.18
17	0 55 12.22	9.283	7 24 58.5	73.81	17 3 4.2	0 55 40.70	9.276	7 28 45.1	73.74
18	0 58 54.54	9.242	7 54 24.3	73.33	18 3 4.0	0 59 22.86	9.235	7 58 9.1	73.25
19	1 2 35.85	9.200	8 23 38.4	72.83	19 3 3.7	1 3 4.01	9.193	8 27 21.3	72.76
20	1 6 16.15	9.158	8 52 40.2	72.31	20 3 3.5	1 6 44.14	9.150	8 56 21.1	72.23
21	1 9 55.40	9.114	9 21 29.2	71.76	21 3 3.2	1 10 23.22	9.106	9 25 8.1	71.67
22	1 13 33.59	9.069	9 50 4.8	71.19	22 3 2.9	1 14 1.22	9.061	9 53 41.7	71.10
23	1 17 10.68	9.022	10 18 26.2	70.59	23 3 2.5	1 17 38.12	9.014	10 22 0.8	70.49
24	1 20 46.65	8.974	10 46 32.8	69.96	24 3 2.2	1 21 13.89	8.965	10 50 5.1	69.86
25	1 24 21.45	8.925	11 14 24.1	69.31	25 3 1.8	1 24 48.48	8.916	11 17 54.0	69.21
26	1 27 55.05	8.874	11 41 59.4	68.63	26 3 1.5	1 28 21.86	8.865	11 45 26.8	68.52
27	1 31 27 39	8.820	12 9 18.1	67.92	27 3 1.1	1 32 53.99	8.811	12 12 42.9	67.81
28	1 34 58.42	8.765	12 36 19.5	67.19	28 3 0.6	1 35 24.79	8.755	12 39 41.6	67.08
29	1 38 28.09	8.707	13 3 2.9	66.43	29 3 0.2	1 38 54.22	8.696	13 6 22.1	66.31
30	1 41 56.33	8.646	13 29 27.6	65.64	30 2 59.7	1 42 22.21	8.635	13 32 44.0	65.51
31	1 45 23.07	+8.583	+13 55 33.1	+64.82	31 2 59.2	1 45 48.68	+8.571	+13 58 46.4	+64.69

VENUS, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	1 38 28.09	+8.707	+13 3 2.9	+66.43	1 3 0.2	1 38 54.22	+8.696	+13 6 22.1	+66.31
2	1 41 56.33	8.646	13 29 27.6	65.64	2 2 59.7	1 42 22.21	8.635	13 32 44.0	65.51
3	1 45 23.07	8.583	13 55 33.1	64.82	3 2 59.2	1 45 48.68	8.571	13 58 46.4	64.69
4	1 48 48.23	8.515	14 21 18.8	63.98	4 2 58.6	1 49 13.56	8.503	14 24 29.0	63.85
5	1 52 11.74	8.445	14 46 43.8	63.10	5 2 58.0	1 52 36.79	8.433	14 49 50.8	62.97
6	1 55 33.53	8.371	15 11 47.5	62.20	6 2 57.5	1 55 58.29	8.358	15 14 51.3	62.06
7	1 58 53.49	8.292	15 36 29.4	61.28	7 2 56.9	1 59 17.93	8.278	15 39 29.8	61.14
8	2 2 11.52	8.210	16 0 48.8	60.33	8 2 56.2	2 2 35.62	8.196	16 3 45.8	60.18
9	2 5 27.53	8.124	16 24 44.9	59.34	9 2 55.5	2 5 51.28	8.109	16 27 38.3	59.19
10	2 8 41.41	8.032	16 48 17.0	58.34	10 2 54.8	2 9 4.80	8.016	16 51 6.8	58.19
11	2 11 53.05	7.936	17 11 24.8	57.31	11 2 54.1	2 12 16.06	7.919	17 14 10.9	57.15
12	2 15 2.33	7.836	17 34 7.6	56.25	12 2 53.3	2 15 24.94	7.818	17 36 49.9	56.09
13	2 18 9.13	7.731	17 56 24.8	55.17	13 2 52.5	2 18 31.34	7.713	17 59 3.2	55.00
14	2 21 13.33	7.619	18 18 15.5	54.06	14 2 51.6	2 21 35.11	7.600	18 20 49.9	53.89
15	2 24 14.81	7.502	18 39 39.3	52.92	15 2 50.7	2 24 36.13	7.483	18 42 9.6	52.75
16	2 27 13.42	7.381	19 0 35.5	51.76	16 2 49.7	2 27 34.28	7.361	19 3 1.7	51.58
17	2 30 9.02	7.251	19 21 3.6	50.57	17 2 48.7	2 30 29.39	7.230	19 23 25.6	50.40
18	2 33 1.45	7.116	19 41 2.9	49.37	18 2 47.6	2 33 21.31	7.094	19 43 20.6	49.19
19	2 35 50.55	6.974	20 0 32.9	48.13	19 2 46.5	2 36 9.87	6.951	20 2 46.2	47.94
20	2 38 36.15	6.825	20 19 32.8	46.86	20 2 45.2	2 38 54.92	6.801	20 21 41.7	46.67
21	2 41 18.07	6.668	20 38 2.1	45.56	21 2 44.0	2 41 36.28	6.643	20 40 6.4	45.37
22	2 43 56.13	6.503	20 55 59.9	44.24	22 2 42.7	2 44 13.75	6.478	20 57 59.7	44.06
23	2 46 30.14	6.330	21 13 25.7	42.90	23 2 41.3	2 46 47.15	6.304	21 15 20.8	42.70
24	2 48 59.88	6.148	21 30 18.7	41.52	24 2 39.8	2 49 16.26	6.121	21 32 9.1	41.32
25	2 51 25.14	5.957	21 46 38.3	40.10	25 2 38.3	2 51 40.85	5.929	21 48 23.8	39.90
26	2 53 45.70	5.755	22 2 23.4	38.65	26 2 36.7	2 54 0.72	5.726	22 4 4.1	38.45
27	2 56 1.34	5.543	22 17 33.3	37.17	27 2 35.0	2 56 15.66	5.515	22 19 9.0	36.96
28	2 58 11.80	5.322	22 32 7.1	35.64	28 2 33.3	2 58 25.39	5.292	22 33 37.9	35.43
29	3 0 16.81	5.091	22 46 3.8	34.07	29 2 31.4	3 0 29.65	5.059	22 47 29.5	33.86
30	3 2 16.11	4.849	22 59 22.3	32.46	30 2 29.5	3 2 28.16	4.815	23 0 42.9	32.25
31	3 4 9.44	4.593	23 12 1.6	30.80	31 2 27.4	3 4 20.69	4.559	23 13 17.0	30.59
Apr. 1	3 5 56.50	4.327	23 24 0.5	29.10	1 2 25.2	3 6 6.94	4.292	23 25 10.7	28.88
2	3 7 37.03	4.048	23 35 17.9	27.34	2 2 23.0	3 7 46.64	4.013	23 36 22.8	27.12
3	3 9 10.72	3.758	23 45 52.4	25.52	3 2 20.6	3 9 19.49	3.723	23 46 52.0	25.30
4	3 10 37.30	3.455	23 55 42.6	23.65	4 2 18.1	3 10 45.22	3.420	23 56 36.8	23.43
5	3 11 56.48	3.141	24 4 47.0	21.71	5 2 15.5	3 12 3.54	3.105	24 5 35.8	21.48
6	3 13 7.96	2.814	24 13 4.1	19.70	6 2 12.7	3 13 14.15	2.778	24 13 47.5	19.47
7	3 14 11.44	2.475	24 20 32.3	17.63	7 2 9.8	3 14 16.76	2.439	24 21 10.2	17.41
8	3 15 6.66	2.125	24 27 9.8	15.48	8 2 6.8	3 15 11.12	2.089	24 27 42.3	15.26
9	3 15 53.34	1.764	24 32 54.9	13.26	9 2 3.6	3 15 56.94	1.729	24 33 22.1	13.04
10	3 16 31.26	1.394	24 37 45.8	10.96	10 2 0.3	3 16 34.02	1.360	24 38 7.6	10.74
11	3 17 0.20	1.016	24 41 40.6	8.58	11 1 56.8	3 17 2.15	0.983	24 41 57.1	8.37
12	3 17 19.95	0.630	24 44 37.3	6.12	12 1 53.2	3 17 21.12	0.598	24 44 48.6	5.91
13	3 17 30.35	+0.237	24 46 33.9	3.58	13 1 49.4	3 17 30.75	+0.207	24 46 40.2	3.38
14	3 17 31.19	-0.163	24 47 28.5	+ 0.96	14 1 45.5	3 17 30.88	-0.191	24 47 30.0	+ 0.76
15	3 17 22.37	0.569	24 47 19.1	- 1.75	15 1 41.4	3 17 21.39	0.595	24 47 16.0	- 1.93
16	3 17 3.84	0.975	24 46 3.5	4.56	16 1 37.1	3 17 2.24	0.998	24 45 56.0	4.73
17	3 16 35.57	1.380	24 43 39.6	7.46	17 1 32.7	3 16 33.42	1.400	24 43 28.0	7.62
18	3 15 57.57	1.784	24 40 5.7	10.43	18 1 28.1	3 15 54.94	1.801	24 39 50.3	10.57
19	3 15 9.94	2.183	24 35 20.0	13.46	19 1 23.4	3 15 6.90	2.197	24 35 1.2	13.58
20	3 14 12.82	2.575	24 29 20.8	16.54	20 1 18.5	3 14 9.44	2.586	24 28 59.1	16.64
21	3 13 6.38	2.959	24 22 7.0	19.67	21 1 13.5	3 13 2.74	2.966	24 21 42.8	19.75
22	3 11 50.87	3.330	24 13 37.6	22.84	22 1 8.2	3 11 47.07	3.333	24 13 11.5	22.89
23	3 10 26.67	3.685	24 3 51.6	26.05	23 1 2.9	3 10 22.79	3.684	24 3 24.2	26.08
24	3 8 54.15	4.023	23 52 48.6	29.25	24 0 57.4	3 8 50.29	4.019	23 52 20.5	29.25
25	3 7 13.76	4.339	23 40 28.8	32.44	25 0 51.8	3 7 9.98	4.332	23 40 0.6	32.41
26	3 5 26.09	4.630	23 26 52.6	35.60	26 0 46.1	3 5 22.48	4.619	23 26 25.2	35.54
27	3 3 31.77	4.894	23 12 1.4	38.68	27 0 40.2	3 3 28.44	4.879	23 11 35.4	38.59
28	3 1 31.45	5.126	22 55 57.3	41.65	28 0 34.3	3 1 28.51	5.109	22 55 33.4	41.53
29	2 59 25.90	5.327	22 38 42.7	44.50	29 0 28.3	2 59 23.38	5.308	22 38 21.6	44.35
30	2 57 15.92	5.495	22 20 20.5	47.22	30 0 22.3	2 57 13.87	5.473	22 20 2.9	47.05
31	2 55 2.39	-5.625	+22 0 54.5	-49.80	31 0 16.2	2 55 0.87	-5.601	+22 0 41.1	-49.60

VENUS, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	2 55 2.39	-5.625	+22 0 54.5	-49.80	1 0 16.2	2 55 0.87	-5.601	+22 0 41.1	-49.60
2	2 52 46.19	5.717	21 40 29.5	52.19	2 0 10.0	2 52 45.24	5.692	21 40 20.8	51.97
3	2 50 28.25	5.771	21 19 11.2	54.32	3 0 3.8	2 50 27.89	5.746	21 19 7.8	54.08
					3 23 57.6	2 48 9.77	5.759	20 57 8.2	55.89
4	2 48 9.54	5.784	20 57 5.9	56.11	4 23 51.4	2 45 51.85	5.730	20 34 28.3	57.40
5	2 45 51.02	5.754	20 34 20.0	57.66	5 23 45.2	2 43 35.04	5.664	20 11 15.0	58.62
6	2 43 33.63	5.687	20 11 0.4	58.89	6 23 39.0	2 41 20.29	5.560	19 47 36.1	59.54
7	2 41 18.33	5.581	19 47 15.1	59.80	7 23 32.8	2 39 8.51	5.419	19 23 39.3	60.12
8	2 39 6.05	5.438	19 23 12.0	60.38	8 23 26.7	2 37 0.56	5.242	18 59 32.6	60.36
9	2 36 57.65	5.258	18 58 59.1	60.61	9 23 20.7	2 34 57.26	5.031	18 35 24.1	60.25
10	2 34 53.97	5.044	18 34 44.6	60.48	10 23 14.9	2 32 59.36	4.791	18 11 21.9	59.81
11	2 32 55.75	4.801	18 10 36.8	60.00	11 23 9.2	2 31 7.54	4.525	17 47 33.3	59.08
12	2 31 3.70	4.531	17 46 43.1	59.26	12 23 3.5	2 29 22.46	4.233	17 24 6.3	58.06
13	2 29 18.46	4.236	17 23 11.0	58.25	13 22 57.9	2 27 44.64	3.919	17 1 7.7	56.76
14	2 27 40.57	3.918	17 0 8.5	56.90	14 22 52.5	2 26 14.55	3.587	16 38 44.1	55.19
15	2 26 10.51	3.583	16 37 41.8	55.29	15 22 47.2	2 24 52.60	3.243	16 17 1.3	53.37
16	2 24 48.66	3.235	16 15 56.3	53.45	16 22 42.0	2 23 39.07	2.887	15 56 4.6	51.34
17	2 23 35.32	2.875	15 54 57.6	51.39	17 22 37.0	2 22 34.23	2.519	15 35 58.9	49.12
18	2 22 30.76	2.505	15 34 50.8	49.14	18 22 32.2	2 21 38.27	2.146	15 16 48.7	46.75
19	2 21 35.14	2.129	15 15 40.2	46.74	19 22 27.5	2 20 51.29	1.773	14 58 37.3	44.25
20	2 20 48.57	1.751	14 57 29.0	44.21	20 22 22.9	2 20 13.36	1.395	14 41 27.0	41.66
21	2 20 11.12	1.371	14 40 19.6	41.59	21 22 19.4	2 19 44.51	1.015	14 25 19.8	38.98
22	2 19 42.81	0.990	14 24 14.0	38.89	22 22 14.2	2 19 24.69	0.639	14 10 17.8	36.21
23	2 19 23.58	0.613	14 9 14.2	36.11	23 22 10.1	2 19 13.83	-0.268	13 56 22.5	33.44
24	2 19 13.36	-0.240	13 55 21.3	33.31	24 22 6.1	2 19 11.81	+0.097	13 43 34.1	30.66
25	2 19 12.02	+0.127	13 42 36.0	30.51	25 22 2.3	2 19 18.48	0.457	13 31 52.7	27.88
26	2 19 19.41	0.488	13 30 58.1	27.71	26 21 58.7	2 19 33.70	0.809	13 21 17.7	25.10
27	2 19 35.37	0.841	13 20 27.1	24.92	27 21 55.1	2 19 57.29	1.154	13 11 49.5	22.36
28	2 19 59.73	1.187	13 11 3.2	22.17	28 21 51.7	2 20 29.07	1.492	13 3 27.1	19.64
29	2 20 32.30	1.526	13 2 45.1	19.44	29 21 48.4	2 21 8.84	1.821	12 56 8.8	16.96
30	2 21 12.88	1.855	12 55 31.8	16.75	30 21 45.3	2 21 56.39	2.141	12 49 54.1	14.34
31	2 22 1.25	2.175	12 49 22.1	14.13	31 21 42.3	2 22 51.52	2.452	12 44 41.4	11.80
June 1	2 22 57.20	2.486	12 44 14.5	11.58	1 21 39.4	2 23 54.00	2.753	12 40 28.9	9.31
2	2 24 0.50	2.788	12 40 7.3	9.09	2 21 36.6	2 25 3.62	3.046	12 37 15.1	6.90
3	2 25 10.95	3.081	12 36 58.8	6.68	3 21 33.9	2 26 20.16	3.331	12 34 58.1	4.57
4	2 26 28.33	3.366	12 34 47.2	4.35	4 21 31.3	2 27 43.44	3.608	12 33 36.2	2.31
5	2 27 52.44	3.642	12 33 30.7	- 2.09	5 21 28.9	2 29 13.25	3.875	12 33 7.5	- 0.11
6	2 29 23.06	3.909	12 33 7.5	+ 0.11	6 21 26.6	2 30 49.38	4.134	12 33 30.1	+ 1.98
7	2 31 0.00	4.168	12 33 35.4	2.20	7 21 24.4	2 32 31.63	4.386	12 24 41.8	3.99
8	2 32 43.06	4.419	12 34 52.4	4.20	8 21 22.2	2 34 19.81	4.629	12 36 40.8	5.91
9	2 34 32.04	4.661	12 36 56.6	6.12	9 21 20.2	2 36 13.75	4.865	12 39 24.8	7.74
10	2 36 26.76	4.897	12 39 45.7	7.95	10 21 18.2	2 38 13.24	5.093	12 42 51.8	9.50
11	2 38 27.02	5.124	12 43 17.7	9.70	11 21 16.3	2 40 18.11	5.312	12 47 0.0	11.17
12	2 40 32.64	5.343	12 47 30.8	11.37	12 21 14.6	2 42 28.19	5.524	12 51 47.2	12.75
13	2 42 43.46	5.554	12 52 22.7	12.94	13 21 12.9	2 44 43.30	5.731	12 57 11.5	14.26
14	2 44 59.30	5.761	12 57 51.5	14.44	14 21 11.3	2 47 3.27	5.932	13 3 10.7	15.68
15	2 47 19.99	5.961	13 3 55.1	15.85	15 21 9.8	2 49 27.96	6.125	13 9 43.0	17.01
16	2 49 45.38	6.153	13 10 31.5	17.17	16 21 8.3	2 51 57.20	6.312	13 16 46.3	18.25
17	2 52 15.30	6.339	13 17 38.7	18.40	17 21 6.9	2 54 30.85	6.492	13 24 18.7	19.41
18	2 54 49.61	6.519	13 25 14.8	19.54	18 21 5.6	2 57 8.76	6.666	13 32 18.1	20.50
19	2 57 28.17	6.692	13 33 17.9	20.64	19 21 4.4	2 59 50.80	6.835	13 40 42.9	21.52
20	3 0 10.84	6.861	13 41 46.1	21.67	20 21 3.2	3 2 36.82	7.000	13 49 31.2	22.48
21	3 2 57.48	7.025	13 50 37.6	22.60	21 21 2.1	3 5 26.72	7.159	13 58 41.2	23.35
22	3 5 47.98	7.183	13 59 50.5	23.46	22 21 1.1	3 8 20.37	7.312	14 8 10.9	24.15
23	3 8 42.20	7.335	14 9 23.1	24.25	23 21 0.1	3 11 17.65	7.461	14 17 59.1	24.86
24	3 11 40.04	7.484	14 19 13.8	24.96	24 20 59.2	3 14 18.44	7.606	14 28 3.6	25.52
25	3 14 41.39	7.628	14 29 20.7	25.61	25 20 58.3	3 17 22.66	7.745	14 38 23.0	26.11
26	3 17 46.15	7.767	14 39 42.4	26.19	26 20 57.5	3 20 30.21	7.882	14 48 56.0	26.64
27	3 20 54.22	7.903	14 50 17.3	26.71	27 20 56.7	3 23 41.00	8.016	14 59 41.1	27.09
28	3 24 5.52	8.037	15 1 3.9	27.16	28 20 56.0	3 26 54.95	8.146	15 10 36.3	27.51
29	3 27 19.96	8.166	15 12 0.7	27.56	29 20 55.4	3 30 11.97	8.270	15 21 40.7	27.85
30	3 30 37.46	+8.290	15 23 6.4	+27.90	30 20 54.8	3 33 31.99	+8.394	+15 32 52.5	+28.14

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	3 33 57.95	+8.413	+15 34 19.4	+28.18	1 20 54.2	3 36 54.96	+8.517	+15 44 10.6	+28.37
2	3 37 21.37	8.535	15 45 38.5	28.40	2 20 53,7	3 40 20.80	8.636	15 55 33.6	28.55
3	3 40 47.65	8.654	15 57 2.3	28.57	3 20 53.2	3 43 49.45	8.753	16 7 0.4	28.69
4	3 44 16.73	8.770	16 8 29.6	28.69	4 20 52.8	3 47 20.87	8.868	16 18 29.5	28.75
5	3 47 48.56	8.884	16 19 59.1	28.76	5 20 52.4	3 50 55.00	8.978	16 29 59.6	28.77
6	3 51 23.08	8.994	16 31 29.5	28.77	6 20 52.1	3 54 31.75	9.086	16 41 29.7	28.74
7	3 55 0.23	9.102	16 42 59.7	28.74	7 20 51.8	3 58 11.10	9.194	16 52 58.6	28.66
8	3 58 39.96	9.209	16 54 28.5	28.65	8 20 51.6	4 1 53.01	9.299	17 4 25.2	28.54
9	4 2 22.23	9.314	17 5 54.7	28.52	9 20 51.4	4 5 37.43	9.402	17 15 48.1	28.37
10	4 6 7.00	9.417	17 17 17.0	28.34	10 20 51.2	4 9 24.29	9.503	17 27 6.1	28.14
11	4 9 54.21	9.517	17 28 34.5	28.11	11 20 51.1	4 13 13.55	9.603	17 38 18.3	27.88
12	4 13 43.81	9.617	17 39 46.0	27.84	12 20 51.0	4 17 5.21	9.701	17 49 23.6	27.57
13	4 17 35.78	9.714	17 50 50.4	27.52	13 20 51.0	4 20 59.17	9.797	18 0 21.0	27.21
14	4 21 30.05	9.809	18 1 46.7	27.16	14 20 51.0	4 24 55.41	9.890	18 11 9.2	26.81
15	4 25 26.59	9.902	18 12 33.6	26.75	15 20 51.0	4 28 53.88	9.982	18 21 47.2	26.37
16	4 29 25.34	9.993	18 23 10.2	26.30	16 20 51.1	4 32 54.52	10.072	18 32 14.1	25.87
17	4 33 26.25	10.083	18 33 35.4	25.80	17 20 51.2	4 36 57.29	10.160	18 42 28.7	25.34
18	4 37 29.27	10.170	18 43 48.2	25.26	18 20 51.3	4 41 2.13	10.245	18 52 30.0	24.77
19	4 41 34.36	10.255	18 53 47.7	24.69	19 20 51.5	4 45 9.00	10.329	19 2 17.1	24.16
20	4 45 41.47	10.338	19 3 32.9	24.07	20 20 51.7	4 49 17.87	10.411	19 11 49.1	23.51
21	4 49 50.56	10.419	19 13 2.7	23.41	21 20 51.9	4 53 28.68	10.491	19 21 4.9	22.82
22	4 54 1.57	10.498	19 22 16.3	22.72	22 20 52.2	4 57 41.38	10.569	19 30 3.9	22.09
23	4 58 14.46	10.576	19 31 12.9	21.99	23 20 52.5	5 1 55.90	10.644	19 38 45.1	21.34
24	5 2 29.17	10.651	19 39 51.6	21.23	24 20 52.8	5 6 12.24	10.718	19 47 7.6	20.54
25	5 6 45.68	10.725	19 48 11.5	20.43	25 20 53.2	5 10 30.31	10.790	19 55 10.7	19.72
26	5 11 3.93	10.796	19 56 11.9	19.60	26 20 53.6	5 14 50.11	10.861	20 2 53.4	18.85
27	5 15 23.87	10.866	20 3 51 8	18.73	27 20 54.0	5 19 11.58	10.929	20 10 15.1	17.95
28	5 19 45.45	10.933	20 11 10.6	17.83	28 20 54.4	5 23 34.65	10.995	20 17 15.0	17.04
29	5 24 8.64	11.000	20 18 7.5	16.91	29 20 54.9	5 27 59.28	11.059	20 23 52.4	16.08
30	5 28 33.39	11.063	20 24 41.8	15.95	30 20 55.4	5 32 25.43	11.121	20 30 6.6	15.09
31	5 32 59.65	11.125	20 30 52.8	14.96	31 20 55.9	5 36 53.07	11.182	20 35 56.8	14.09
Aug. 1	5 37 27.39	11.186	20 36 39.8	13.95	1 20 56.4	5 41 22.15	11.242	20 41 22.6	13.06
2	5 41 56.56	11.245	20 42 2.3	12.92	2 20 57.0	5 45 52.63	11.299	20 46 23.2	11.99
3	5 46 27.11	11.302	20 46 59.7	11.85	3 20 57.6	5 50 24.50	11.355	20 50 58.1	10.91
4	5 50 59.03	11.357	20 51 31.0	10.76	4 20 58.2	5 54 57.69	11.409	20 55 6.6	9.80
5	5 55 32.26	11.411	20 55 36.0	9.65	5 20 58.8	5 59 32.16	11.463	20 58 48.2	8.67
6	6 0 6.76	11.464	20 59 14.1	8.52	6 20 59.5	6 4 7.85	11.513	21 2 2.3	7.51
7	6 4 42.49	11.514	21 2 24.6	7.36	7 21 0.1	6 8 44.72	11.561	21 4 48.3	6.33
8	6 9 19.38	11.561	21 5 7.0	6.18	8 21 0.8	6 13 22.75	11.606	21 7 5.7	5.13
9	6 13 57.39	11.606	21 7 20.8	4.98	9 21 1.5	6 18 1.85	11.651	21 8 54.2	3.91
10	6 18 36.49	11.651	21 9 5.6	3.76	10 21 2.2	6 22 41.99	11.694	21 10 13.2	2.68
11	6 23 16.62	11.693	21 10 20.9	2.52	11 21 3.0	6 27 23.12	11.734	21 11 2.3	1.42
12	6 27 57.72	11.732	21 11 6.2	+ 1.26	12 21 3.7	6 32 5.19	11.772	21 11 21.2	+ 0.14
13	6 32 39.75	11.770	21 11 21.3	− 0.02	13 21 4.5	6 36 48.16	11.809	21 11 9.1	− 1.15
14	6 37 22.66	11.806	21 11 5.5	1.31	14 21 5.3	6 41 31.97	11.843	21 10 26.0	2.45
15	6 42 6.40	11.840	21 10 18.6	2.61	15 21 6.1	6 46 16.54	11.873	21 9 11.5	3.77
16	6 46 50.91	11.870	21 9 0.3	3.92	16 21 6.9	6 51 1.82	11.902	21 7 25.3	5.10
17	6 51 36.12	11.898	21 7 10.4	5.25	17 21 7.7	6 55 47.77	11.928	21 5 7.1	6.44
18	6 56 21.99	11.924	21 4 48.4	6.59	18 21 8.6	7 0 34.33	11.952	21 2 16.7	7.79
19	7 1 8.46	11.948	21 1 54.2	7.94	19 21 9.4	7 5 21.44	11.975	20 58 53.8	9.13
20	7 5 55.47	11.970	20 58 27.6	9.28	20 21 10.2	7 10 9.06	11.994	20 54 58.5	10.49
21	7 10 42.97	11.989	20 54 28.6	10.64	21 21 11.1	7 14 57.11	12.011	20 50 30.3	11.86
22	7 15 30.90	12.005	20 49 56.7	12.01	22 21 11.9	7 19 45.55	12.026	20 45 29.4	13.23
23	7 20 19.21	12.020	20 44 52.1	13.38	23 21 12.8	7 24 34.34	12.039	20 39 55.3	14.61
24	7 25 7.86	12.033	20 39 14.4	14.76	24 21 13.7	7 29 23.41	12.050	20 33 48.3	15.98
25	7 29 56.79	12.044	20 33 3.8	16.13	25 21 14.6	7 34 12.72	12.059	20 27 8.2	17.36
26	7 34 45.95	12.052	20 26 20.1	17.51	26 21 15.5	7 39 2.21	12.066	20 19 55.1	18.73
27	7 39 35.29	12.060	20 19 3.5	18.88	27 21 16.4	7 43 51.85	12.071	20 12 8.9	20.09
28	7 44 24.76	12.064	20 11 13.9	20.24	28 21 17.2	7 48 41.58	12.073	20 3 49.9	21.45
29	7 49 14.32	12.066	20 2 51.5	21.59	29 21 18.1	7 53 31.36	12.076	19 54 57.9	22.82
30	7 54 3.93	12.068	19 53 56.2	22.96	30 21 19.0	7 58 21.17	12.075	19 45 33.2	24.19
31	7 58 53.55	12.067	+19 44 28.2	−24.33	31 21 19.9	8 3 10.96	12.073	+19 35 35.8	−25.56

VENUS, 1873.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1873.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	8 3 43.15	12.065	+19 34 27.5	-25.70	1 21 20.8	8 8 0.68	12.069	+19 25 6.0	-26.92
2	8 8 32.68	12.061	19 23 54.4	27.05	2 21 21.7	8 20 50.30	12.064	19 14 3.7	28.27
3	8 13 22.11	12.056	19 12 48.9	28.40	3 21 22.5	8 17 39.80	12.058	19 2 29.0	29.61
4	8 18 11.41	12.050	19 1 11.2	29.73	4 21 23.4	8 22 29.11	12.051	18 50 22.4	30.94
5	8 23 0.53	12.043	18 49 1.6	31.06	5 21 24.3	8 27 18.23	12.042	18 37 44.1	32.26
6	8 27 49.45	12.034	18 36 20.3	32.38	6 21 25.2	8 32 7.13	12.032	18 24 34.2	33.56
7	8 32 38.15	12.024	18 23 7.5	33.68	7 21 26.0	8 36 55.78	12.021	18 10 53.0	34.86
8	8 37 26.60	12.013	18 9 23.5	34.98	8 21 26.9	8 41 44.13	12.008	17 56 40.8	36.15
9	8 42 14.75	12.000	17 55 8.5	36.26	9 21 27.7	8 46 32.18	11.994	17 41 57.9	37.42
10	8 47 2.59	11.986	17 40 22.9	37.53	10 21 28.6	8 51 19.89	11.981	17 26 44.6	38.68
11	8 51 50.09	11.972	17 25 6.9	38.79	11 21 29.4	8 56 7.24	11.966	17 11 1.3	39.93
12	8 56 37.24	11.957	17 9 21.0	40.03	12 21 30.3	9 0 54.20	11.949	16 54 48.3	41.15
13	9 1 24.00	11.940	16 53 5.5	41.25	13 21 31.1	9 5 40.76	11.931	16 38 6.2	42.36
14	9 6 10.35	11.922	16 36 20.9	42.46	14 21 31.9	9 10 26.89	11.913	16 20 55.1	43.56
15	9 10 56.27	11.904	16 19 7.5	43.65	15 21 32.7	9 15 12.57	11.894	16 3 15.6	44.73
16	9 15 41.74	11.885	16 1 25.7	44.82	16 21 33.5	9 19 57.79	11.874	15 45 8.1	45.88
17	9 20 26.75	11.865	15 43 16.0	45.97	17 21 34.3	9 24 42.53	11.854	15 26 33.2	47.02
18	9 25 11.28	11.845	15 24 39.0	47.10	18 21 35.1	9 29 26.78	11.832	15 7 31.3	48.13
19	9 29 55.32	11.824	15 5 35.1	48.21	19 21 35.9	9 34 10.52	11.811	14 48 3.0	49.22
20	9 34 38.85	11.803	14 46 4.8	49.30	20 21 36.7	9 38 53.73	11.789	14 28 8.7	50.29
21	9 39 21.86	11.781	14 26 8.6	50.36	21 21 37.4	9 43 36.40	11.767	14 7 49.2	51.34
22	9 44 4.33	11.759	14 5 47.2	51.41	22 21 38.2	9 48 18.55	11.745	13 47 4.6	52.37
23	9 48 46.28	11.737	13 45 0.8	52.44	23 21 38.9	9 53 0.17	11.723	13 25 55.6	53.36
24	9 53 27.70	11.715	13 23 50.1	53.43	24 21 39.7	9 57 41.26	11.701	13 4 22.9	54.34
25	9 58 8.59	11.693	13 2 15.8	54.41	25 21 40.5	10 2 21.81	11.679	12 42 27.0	55.29
26	10 2 48.95	11.671	12 40 18.4	55.35	26 21 41.2	10 7 1.83	11.657	12 20 8.6	56.22
27	10 7 28.78	11.649	12 17 58.6	56.28	27 21 41.9	10 11 41.33	11.635	11 57 28.3	57.12
28	10 12 8.09	11.627	11 55 16.9	57.18	28 21 42.6	10 16 20.30	11.612	11 34 26.6	58.01
29	10 16 46.87	11.605	11 32 13.8	58.06	29 21 43.3	10 20 58.76	11.591	11 11 4.1	58.86
30	10 21 25.14	11.584	11 8 50.0	58.91	30 21 44.0	10 25 36.72	11.571	10 47 21.2	59.69
Oct. 1	10 26 2.93	11.564	10 45 5.9	59.74	1 21 44.6	10 30 14.21	11.552	10 23 18.8	60.50
2	10 30 40.25	11.545	10 21 2.3	60.54	2 21 45.3	10 34 51.24	11.533	9 58 57.3	61.28
3	10 35 17.10	11.526	9 56 39.8	61.32	3 21 46.0	10 39 27.82	11.515	9 34 17.4	62.03
4	10 39 53.50	11.508	9 31 59.0	62.07	4 21 46.6	10 44 3.97	11.497	9 9 19.7	62.76
5	10 44 29.48	11.491	9 7 0.4	62.80	5 21 47.3	10 48 39.69	11.480	8 44 4.9	63.45
6	10 49 5.05	11.474	8 41 44.7	63.49	6 21 47.9	10 53 15.03	11.464	8 18 33.7	64.12
7	10 53 40.24	11.458	8 16 12.6	64.16	7 21 48.6	10 57 50.00	11.450	7 52 46.5	64.78
8	10 58 15.06	11.444	7 50 24.7	64.81	8 21 49.2	11 2 24.63	11.436	7 26 44.1	65.40
9	11 2 49.54	11.430	7 24 21.6	65.43	9 21 49.8	11 6 58.93	11.423	7 0 27.0	65.99
10	11 7 23.70	11.417	6 58 3.9	66.01	10 21 50.4	11 11 32.95	11.412	6 33 56.0	66.55
11	11 11 57.57	11.406	6 31 32.4	66.57	11 21 51.0	11 16 6.70	11.401	6 7 11.7	67.10
12	11 16 31.17	11.395	6 4 47.6	67.12	12 21 51.6	11 20 40.20	11.390	5 40 14.9	67.62
13	11 21 4.52	11.385	5 37 50.3	67.63	13 21 52.3	11 25 13.44	11.380	5 13 6.1	68.09
14	11 25 37.63	11.375	5 10 41.2	68.10	14 21 52.9	11 29 46.46	11.372	4 45 46.3	68.54
15	11 30 10.53	11.367	4 43 21.1	68.55	15 21 53.5	11 34 19.32	11.366	4 18 15.9	68.97
16	11 34 43.26	11.361	4 15 50.6	68.97	16 21 54.1	11 38 52.02	11.360	3 50 35.8	69.36
17	11 39 15.84	11.355	3 48 10.3	69.36	17 21 54.7	11 43 24.61	11.356	3 22 46.4	69.72
18	11 43 48.31	11.351	3 20 20.9	69.72	18 21 55.3	11 47 57.11	11.353	2 54 48.8	70.05
19	11 48 20.69	11.348	2 52 23.3	70.05	19 21 55.9	11 52 29.55	11.350	2 26 43.5	70.36
20	11 52 53.01	11.346	2 24 18.1	70.36	20 21 56.5	11 57 1.94	11.349	1 58 31.3	70.64
21	11 57 25.29	11.345	1 56 6.0	70.63	21 21 57.1	12 1 34.33	11.350	1 30 13.0	70.89
22	12 1 57.57	11.346	1 27 47.8	70.88	22 21 57.7	12 6 6.74	11.352	1 1 49.3	71.08
23	12 6 29.88	11.348	0 59 24.3	71.07	23 21 58.3	12 10 39.22	11.355	0 33 20.9	71.27
24	12 11 2.25	11.351	0 30 56.3	71.25	24 21 58.9	12 15 11.79	11.359	+ 0 4 48.3	71.42
25	12 15 34.71	11.355	+ 0 2 24.2	71.40	25 21 59.5	12 19 44.48	11.365	− 0 23 47.7	71.54
26	12 20 7.29	11.361	− 0 26 11.2	71.52	26 22 0.1	12 24 17.32	11.372	0 52 26.1	71.62
27	12 24 40.03	11.368	0 54 49.0	71.60	27 22 0.7	12 28 50.35	11.381	1 21 6.0	71.69
28	12 29 12.96	11.377	1 23 28.4	71.66	28 22 1.3	12 33 23.61	11.391	1 49 47.1	71.71
29	12 33 46.12	11.387	1 52 8.9	71.68	29 22 1.9	12 37 57.13	11.403	2 18 28.5	71.72
30	12 38 19.55	11.399	2 20 49.6	71.68	30 22 2.5	12 42 30.95	11.417	2 47 9.6	71.68
31	12 42 53.29	11.413	2 49 29.8	71.64	31 22 3.1	12 47 5.11	11.432	3 15 49.5	71.62
32	12 47 27.36	11.428	− 3 18 8.8	−71.58	32 22 3.8	12 51 39.65	11.448	− 3 44 27.6	−71.53

VENUS, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	12 47 27.36	11.428	− 3 18 8.8	−71.58	1 22 3.8	12 51 39.65	11.448	− 3 44 27.6	−71.53
2	12 52 1.81	11.444	3 46 46.0	71.49	2 22 4.4	12 56 14.61	11.466	4 13 3.1	71.41
3	12 56 36.68	11.463	4 15 20.5	71.36	3 22 5.1	13 0 50.03	11.486	4 41 35.4	71.26
4	13 1 12.01	11.483	4 43 51.7	71.21	4 22 5.7	13 5 25.93	11.507	5 10 3.5	71.07
5	13 5 47.83	11.504	5 12 18.7	71.02	5 22 6.4	13 10 2.35	11.529	5 38 26.8	70.85
6	13 10 24.17	11.526	5 40 40.8	70.80	6 22 7.0	13 14 39.34	11.553	6 6 44.7	70.61
7	13 15 1.07	11.550	6 8 57.4	70.55	7 22 7.7	13 19 16.93	11.579	6 34 56.2	70.33
8	13 19 38.58	11.576	6 37 7.6	70.27	8 22 8.4	13 23 55.17	11.607	7 3 00.5	70.01
9	13 34 16.73	11.604	7 5 10.5	69.95	9 22 9.1	13 28 34.07	11.636	7 30 57.0	69.67
10	13 28 55.55	11.632	7 33 5.5	69.61	10 22 9.8	13 33 13.68	11.666	7 58 44.9	69.39
11	13 33 35.08	11.662	8 0 51.9	69.23	11 22 10.6	13 37 54.04	11.698	8 26 23.5	68.89
12	13 38 15.35	11.694	8 28 28.9	68.82	12 22 11.3	13 42 35.17	11.731	8 53 51.8	68.45
13	13 42 56.39	11.727	8 55 55.6	68.38	13 22 12.1	13 47 17.10	11.765	9 21 9.2	67.97
14	13 47 38.23	11.761	9 23 11.3	67.90	14 22 12.8	13 51 59.86	11.800	9 48 14.8	67.47
15	13 52 20.91	11.796	9 50 15.1	67.39	15 22 13.6	13 56 43.48	11.836	10 15 7.8	66.92
16	13 57 4.44	11.832	10 17 6.2	66.84	16 22 14.4	14 1 27.99	11.874	10 41 47.3	66.34
17	14 1 48.86	11.870	10 43 43.8	66.26	17 22 15.2	14 6 13.41	11.913	11 8 12.5	65.73
18	14 6 34.19	11.909	11 10 7.1	65.65	18 22 16.0	14 10 59.79	11.953	11 34 22.8	65.10
19	14 11 20.47	11.950	11 36 15.4	65.01	19 22 16.9	14 15 47.13	11.994	12 0 17.2	64.41
20	14 16 7.71	11.990	12 2 7.7	64.32	20 22 17.8	14 20 35.45	12.035	12 25 55.0	63.70
21	14 20 55.93	12.031	12 27 43.3	63.61	21 22 18.6	14 25 24.79	12.077	12 51 15.2	62.95
22	14 25 45.17	12.073	12 53 1.3	62.86	22 22 19.5	14 30 15.17	12.121	13 16 17.0	62.18
23	14 30 35.44	12.117	13 18 0.9	62.08	23 22 20.4	14 35 6.61	12.166	13 40 59.8	61.36
24	14 35 26.77	12.161	13 42 41.4	61.26	24 22 21.4	14 39 59.12	12.211	14 5 22.7	60.52
25	14 40 19.17	12.206	14 7 1.9	60.42	25 22 22.3	14 44 52.73	12.257	14 29 24.8	59.63
26	14 45 12.66	12.252	14 31 1.6	59.53	26 22 23.3	14 49 47.45	12.303	14 53 5.3	58.72
27	14 50 7.26	12.298	14 54 39.7	58.62	27 22 24.3	14 54 43.30	12.351	15 16 23.4	57.77
28	14 55 2.99	12.346	15 17 55.4	57.67	28 22 25.3	14 59 40.32	12.400	15 39 18.6	56.89
29	14 59 59.88	12.394	15 40 48.0	56.69	29 22 26.3	15 4 38.51	12.448	16 1 49.8	55.78
30	15 4 57.93	12.442	16 3 16.7	55.67	30 22 27.4	15 9 37.85	12.497	16 23 56.3	54.73
Dec. 1	15 9 57.13	12.491	16 25 20.6	54.62	1 22 28.4	15 14 38.37	12.557	16 45 37.3	53.66
2	15 14 57.50	12.540	16 46 59.0	53.55	2 22 29.5	15 19 40.08	12.597	17 6 52.2	52.55
3	15 19 59.06	12.590	17 8 11.2	52.44	3 22 30.6	15 24 43.00	12.647	17 27 40.0	51.41
4	15 25 1.82	12.640	17 28 56.4	51.30	4 22 31.7	15 29 47.12	12.697	17 48 0.0	50.23
5	15 30 5.78	12.690	17 49 13.7	50.12	5 22 32.9	15 34 52.45	12.747	18 7 51.5	49.03
6	15 35 10.94	12.740	18 9 2.5	48.92	6 22 34.0	15 39 58.98	12.797	18 27 13.7	47.79
7	15 40 17.30	12.790	18 28 22.0	47.68	7 22 35.2	15 45 6.72	12.847	18 46 5.8	46.53
8	15 45 24.86	12.839	18 47 11.4	46.42	8 22 36.4	15 50 15.65	12.897	19 4 27.3	45.23
9	15 50 33.69	12.889	19 5 30.1	45.12	9 22 37.7	15 55 25.79	12.946	19 22 17.1	43.89
10	15 55 43.54	12.939	19 23 17.2	43.78	10 22 38.9	16 0 37.10	12.995	19 39 34.7	42.53
11	16 0 54.65	12.987	19 40 32.0	42.42	11 22 40.2	16 5 49.57	13.043	19 56 19.2	41.15
12	16 6 6.91	13.035	19 57 13.8	41.04	12 22 41.5	16 11 3.19	13.091	20 12 30.1	39.73
13	16 11 20.31	13.081	20 13 22.0	39.62	13 22 42.8	16 16 17.92	13.137	20 28 6.8	38.29
14	16 16 34.82	13.127	20 28 55.9	38.18	14 22 44.1	16 21 33.75	13.182	20 43 8.4	36.81
15	16 21 50.42	13.172	20 43 54.8	36.70	15 22 45.4	16 26 50.65	13.226	20 57 34.2	35.31
16	16 27 7.08	13.216	20 58 17.9	35.20	16 22 46.8	16 32 8.69	13.270	21 11 23.5	33.78
17	16 32 24.78	13.259	21 12 4.6	33.67	17 22 48.2	16 37 27.57	13.311	21 24 36.0	32.22
18	16 37 43.49	13.300	21 25 14.4	32.12	18 22 49.6	16 42 47.50	13.350	21 37 10.8	30.65
19	16 43 3.16	13.339	21 37 46.7	30.55	19 22 51.0	16 48 8.37	13.389	21 49 7.6	29.05
20	16 48 23.76	13.377	21 49 40.9	28.95	20 22 52.4	16 53 30.12	13.425	22 0 25.6	27.42
21	16 53 45.24	13.413	22 0 56.4	27.32	21 22 53.8	16 58 52.74	13.460	22 11 4.4	25.78
22	16 59 7.58	13.448	22 11 32.7	25.68	22 22 55.2	17 4 16.17	13.494	22 21 3.5	24.12
23	17 4 30.72	13.482	22 21 29.4	24.02	23 22 56.7	17 9 40.36	13.526	22 30 22.2	22.43
24	17 9 54.62	13.511	22 30 45.8	22.34	24 22 58.2	17 15 5.27	13.554	22 39 0.3	20.73
25	17 15 19.23	13.539	22 39 21.6	20.64	25 22 59.7	17 20 30.85	13.579	22 46 57.4	19.01
26	17 20 44.50	13.566	22 47 16.4	18.92	26 23 1.2	17 25 57.03	13.603	22 54 13.0	17.28
27	17 26 10.37	13.590	22 54 29.9	17.19	27 23 2.7	17 31 23.77	13.625	23 0 46.8	15.52
28	17 31 36.79	13.612	23 1 1.6	15.44	28 23 4.2	17 36 51.01	13.645	23 6 38.6	13.76
29	17 37 3.71	13.631	23 6 51.3	13.68	29 23 5.7	17 42 18.72	13.663	23 11 47.8	12.00
30	17 42 31.09	13.649	23 11 58.6	11.92	30 23 7.2	17 47 46.82	13.678	23 16 14.3	10.21
31	17 47 58.85	13.664	23 16 23.3	10.14	31 23 8.7	17 53 15.27	13.691	23 19 58.0	8.42
32	17 53 26.96	13.677	−23 20 5.2	− 8.35	32 23 10.3	17 58 44.00	13.702	−23 22 58.7	− 6.62

MARS, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	13 15 25.87	+4.712	− 5 59 39.2	−27.74	0 18 32.1	13 16 53.08	+4.690	− 6 8 12.0	−27.54
1	13 17 18.74	4.692	6 10 42.5	27.52	1 18 30.1	13 18 45.42	4.671	6 19 10.2	27.32
2	13 19 11.13	4.672	6 21 40.4	27.30	2 18 28.0	13 20 37.27	4.650	6 30 3.0	27.09
3	13 21 3.03	4.652	6 32 33.0	27.08	3 18 25.9	13 22 28.63	4.630	6 40 50.5	26.86
4	13 22 54.44	4.632	6 43 20.2	26.85	4 18 23.8	13 24 19.50	4.609	6 51 32.5	26.64
5	13 24 45.35	4.611	6 54 1.8	26.62	5 18 21.7	13 26 9.86	4.588	7 2 9.0	26.41
6	13 26 35.75	4.589	7 4 37.9	26.39	6 18 19.6	13 27 59.71	4.566	7 12 40.0	26.17
7	13 28 25.64	4.568	7 15 8.5	26.16	7 18 17.5	13 29 49.04	4.544	7 23 5.3	25.93
8	13 30 15.00	4.545	7 25 33.4	25.92	8 18 15.4	13 31 37.83	4.522	7 33 24.8	25.69
9	13 32 3.82	4.523	7 35 52.5	25.67	9 18 13.2	13 33 26.08	4.499	7 43 38.6	25.45
10	13 33 52.10	4.500	7 46 5.8	25.43	10 18 11.1	13 35 13.77	4.475	7 53 46.6	25.21
11	13 35 39.82	4.476	7 56 13.3	25.19	11 18 8.9	13 37 0.90	4.451	8 3 48.8	24.97
12	13 37 26.97	4.452	8 6 15.0	24.95	12 18 6.8	13 38 47.45	4.427	8 13 45.2	24.72
13	13 39 13.53	4.427	8 16 10.8	24.70	13 18 4.6	13 40 33.40	4.402	8 23 35.6	24.47
14	13 40 59.49	4.402	8 26 0.6	24.45	14 18 2.4	13 42 18.74	4.376	8 33 19.9	24.21
15	13 42 44.84	4.376	8 35 44.2	24.19	15 18 0.2	13 44 3.46	4.350	8 42 57.9	23.96
16	13 44 29.56	4.350	8 45 21.6	23.93	16 17 58.0	13 45 47.54	4.323	8 52 29.8	23.70
17	13 46 13.64	4.323	8 54 52.8	23.67	17 17 55.8	13 47 30.96	4.295	9 1 55.4	23.43
18	13 47 57.05	4.295	9 4 17.7	23.40	18 17 53.6	13 49 13.71	4.267	9 11 14.6	23.17
19	13 49 39.78	4.266	9 13 36.1	23.13	19 17 51.4	13 50 55.76	4.237	9 20 27.4	22.90
20	13 51 21.80	4.236	9 22 48.1	22.86	20 17 49.1	13 52 37.08	4.206	9 29 33.6	22.62
21	13 53 3.09	4.205	9 31 53.4	22.58	21 17 46.9	13 54 17.65	4.174	9 38 33.1	22.34
22	13 54 43.62	4.173	9 40 52.0	22.30	22 17 44.6	13 55 57.45	4.142	9 47 25.8	22.06
23	13 56 23.38	4.140	9 49 43.8	22.02	23 17 42.3	13 57 36.47	4.109	9 56 11.8	21.77
24	13 58 2.35	4.106	9 58 28.8	21.73	24 17 40.0	13 59 14.68	4.075	10 4 50.9	21.48
25	13 59 40.50	4.072	10 7 6.9	21.44	25 17 37.7	14 0 52.05	4.039	10 13 23.0	21.19
26	14 1 17.80	4.036	10 15 38.0	21.15	26 17 35.4	14 2 28.56	4.003	10 21 48.0	20.89
27	14 2 54.23	3.999	10 24 1.9	20.85	27 17 33.0	14 4 4.18	3.965	10 30 5.8	20.59
28	14 4 29.76	3.961	10 32 18.6	20.55	28 17 30.7	14 5 38.88	3.926	10 38 16.5	20.29
29	14 6 4.37	3.923	10 40 28.1	20.24	29 17 28.3	14 7 12.65	3.887	10 46 19.8	19.99
30	14 7 38.04	3.883	10 48 30.2	19.94	30 17 25.9	14 8 45.48	3.847	10 54 15.8	19.68
31	14 9 10.76	3.842	10 56 25.0	19.63	31 17 23.5	14 10 17.32	3.806	11 2 4.3	19.37
Feb. 1	14 10 42.48	3.800	11 4 12.3	19.32	1 17 21.1	14 11 48.15	3.763	11 9 45.5	19.06
2	14 12 13.17	3.757	11 11 52.2	19.01	2 17 18.6	14 13 17.95	3.720	11 17 19.2	18.75
3	14 13 42.83	3.714	11 19 24.6	18.69	3 17 16.2	14 14 46.70	3.675	11 24 45.4	18.44
4	14 15 11.43	3.669	11 26 49.4	18.38	4 17 13.7	14 16 14.37	3.630	11 32 4.1	18.12
5	14 16 38.95	3.624	11 34 6.7	18.06	5 17 11.2	14 17 40.94	3.584	11 39 15.1	17.80
6	14 18 5.35	3.577	11 41 16.3	17.74	6 17 8.7	14 19 6.38	3.536	11 46 18.5	17.48
7	14 19 30.62	3.529	11 48 18.3	17.42	7 17 6.2	14 20 30.67	3.488	11 53 14.3	17.16
8	14 20 54.72	3.480	11 55 12.6	17.10	8 17 3.6	14 21 53.78	3.438	12 0 2.4	16.84
9	14 22 17.63	3.429	12 1 59.2	16.78	9 17 1.0	14 23 15.68	3.387	12 6 42.8	16.52
10	14 23 39.31	3.377	12 8 38.0	16.45	10 16 58.4	14 24 36.33	3.334	12 13 15.4	16.19
11	14 24 59.74	3.324	12 15 9.0	16.13	11 16 55.8	14 25 55.70	3.280	12 19 40.1	15.86
12	14 26 18.87	3.270	12 21 32.1	15.80	12 16 53.2	14 27 13.77	3.225	12 25 56.9	15.53
13	14 27 36.69	3.214	12 27 47.3	15.47	13 16 50.5	14 28 30.50	3.168	12 32 5.8	15.20
14	14 28 53.15	3.157	12 33 54.5	15.13	14 16 47.9	14 29 45.84	3.110	12 38 6.6	14.86
15	14 30 8.21	3.097	12 39 53.5	14.79	15 16 45.2	14 30 59.75	3.049	12 43 59.3	14.52
16	14 31 21.82	3.036	12 45 44.4	14.45	16 16 42.4	14 32 12.19	2.987	12 49 43.8	14.18
17	14 32 33.95	2.974	12 51 27.1	14.11	17 16 39.7	14 33 23.13	2.924	12 55 20.1	13.84
18	14 33 44.56	2.910	12 57 1.5	13.76	18 16 36.9	14 34 32.53	2.859	13 0 48.0	13.49
19	14 34 53.61	2.844	13 2 27.4	13.40	19 16 34.1	14 35 40.34	2.791	13 6 7.4	13.13
20	14 36 1.05	2.776	13 7 44.8	13.05	20 16 31.3	14 36 46.51	2.722	13 11 18.4	12.78
21	14 37 6.83	2.706	13 12 53.7	12.69	21 16 28.4	14 37 51.01	2.652	13 16 20.7	12.42
22	14 38 10.92	2.634	13 17 53.9	12.33	22 16 25.5	14 38 53.78	2.579	13 21 14.4	12.05
23	14 39 13.27	2.561	13 22 45.4	11.96	23 16 22.6	14 39 54.78	2.504	13 25 59.2	11.68
24	14 40 13.82	2.485	13 27 28.0	11.59	24 16 19.7	14 40 53.97	2.427	13 30 35.2	11.31
25	14 41 12.54	2.407	13 32 1.7	11.22	25 16 16.7	14 41 51.29	2.349	13 35 2.3	10.94
26	14 42 9.37	2.328	13 36 26.5	10.84	26 16 13.7	14 42 46.70	2.269	13 39 20.4	10.56
27	14 43 4.27	2.247	13 40 42.2	10.46	27 16 10.6	14 43 40.17	2.187	13 43 29.4	10.19
28	14 43 57.21	2.164	13 44 48.8	10.09	28 16 7.5	14 44 31.65	2.103	13 47 29.4	9.81
29	14 44 48.13	2.079	13 48 46.4	9.71	29 16 4.4	14 45 21.10	2.017	13 51 20.5	9.44
30	14 45 37.01	+1.993	−13 52 35.0	− 9.33	30 16 1.3	14 46 8.48	+1.930	−13 55 2.4	− 9.06

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	14 44 48.13	+2.079	−13 48 46.4	− 9.71	1 16 4.4	14 45 21.10	+2.017	−13 51 20.5	− 9.44
2	14 45 37.01	1.993	13 52 35.0	9.33	2 16 1.3	14 46 8.48	1.930	13 55 2.4	9.06
3	14 46 23.79	1.905	13 56 14.3	8.95	3 15 58.1	14 46 53.73	1.841	13 58 35.1	8.67
4	14 47 8.42	1.815	13 59 44.4	8.56	4 15 54.9	14 47 36.82	1.750	14 1 58.7	8.29
5	14 47 50.87	1.723	14 3 5.3	8.17	5 15 51.6	14 48 17.70	1.657	14 5 12.9	7.90
6	14 48 31.09	1.629	14 6 16.8	7.78	6 15 48.3	14 48 56.34	1.562	14 8 17.8	7.51
7	14 49 9.04	1.533	14 9 19.0	7.39	7 15 45.0	14 49 32.69	1.466	14 11 13.4	7.12
8	14 49 44.68	1.436	14 12 11.7	7.00	8 15 41.7	14 50 6.72	1.369	14 13 59.5	6.73
9	14 50 17.97	1.337	14 14 55.0	6.61	9 15 38.3	14 50 38.37	1.269	14 16 36.3	6.34
10	14 50 48.86	1.236	14 17 28.8	6.21	10 15 34.8	14 51 7.69	1.167	14 19 3.7	5.94
11	14 51 17.30	1.133	14 19 53.2	5.81	11 15 31.3	14 51 34.37	1.063	14 21 21.4	5.54
12	14 51 43.25	1.029	14 22 7.9	5.41	12 15 27.8	14 51 58.63	0.958	14 23 29.6	5.14
13	14 52 6.67	0.922	14 24 12.9	5.01	13 15 24.2	14 52 20.33	0.850	14 25 28.1	4.73
14	14 52 27.49	0.813	14 26 8.2	4.60	14 15 20.6	14 52 39.43	0.740	14 27 16.8	4.31
15	14 52 45.68	0.702	14 27 53.6	4.18	15 15 16.9	14 52 55.86	0.628	14 28 55.5	3.90
16	14 53 1.17	0.589	14 29 28.9	3.76	16 15 13.2	14 53 9.58	0.515	14 30 24.1	3.48
17	14 53 13.93	0.474	14 30 54.1	3.34	17 15 9.5	14 53 20.56	0.399	14 31 42.7	3.06
18	14 53 23.91	0.357	14 32 9.2	2.91	18 15 5.7	14 53 28.74	0.282	14 32 51.1	2.63
19	14 53 31.06	0.238	14 33 13.9	2.48	19 15 1.9	14 53 34.08	0.162	14 33 49.1	2.20
20	14 53 35.34	+0.118	14 34 8.2	2.04	20 14 58.0	14 53 36.53	+0.041	14 34 36.8	1.77
21	14 53 36.70	−0.005	14 34 52.0	1.60	21 14 54.0	14 53 36.06	−0.081	14 35 13.9	1.33
22	14 53 35.10	0.129	14 35 25.2	1.16	22 14 50.0	14 53 32.62	0.206	14 35 40.3	0.88
23	14 53 30.51	0.254	14 35 47.6	0.71	23 14 46.0	14 53 26.18	0.331	14 35 56.1	− 0.43
24	14 53 22.89	0.381	14 35 59.3	− 0.26	24 14 41.9	14 53 16.73	0.457	14 36 1.1	+ 0.02
25	14 53 12.23	0.508	14 36 0.1	+ 0.20	25 14 37.8	14 53 4.22	0.585	14 35 55.2	0.47
26	14 52 58.49	0.637	14 35 49.9	0.65	26 14 33.6	14 52 48.63	0.714	14 35 38.4	0.93
27	14 52 41.64	0.767	14 35 28.7	1.11	27 14 29.3	14 52 29.96	0.842	14 35 10.6	1.39
28	14 52 21.68	0.896	14 34 56.5	1.57	28 14 25.0	14 52 8.19	0.972	14 34 31.8	1.84
29	14 51 58.61	1.026	14 34 13.2	2.03	29 14 20.7	14 51 43.32	1.101	14 33 42.1	2.30
30	14 51 32.41	1.157	14 33 19.0	2.49	30 14 16.3	14 51 15.36	1.229	14 32 41.6	2.75
31	14 51 3.10	1.286	14 32 13.9	2.94	31 14 11.9	14 50 44.31	1.358	14 31 30.2	3.20
Apr. 1	14 50 30.70	1.414	14 30 57.8	3.40	1 14 7.4	14 50 10.20	1.485	14 30 8.0	3.65
2	14 49 55.23	1.542	14 29 30.9	3.85	2 14 2.8	14 49 33.05	1.611	14 28 35.0	4.10
3	14 49 16.71	1.668	14 27 53.1	4.30	3 13 58.2	14 48 52.89	1.736	14 26 51.3	4.54
4	14 48 35.16	1.794	14 26 4.6	4.74	4 13 53.5	14 48 9.73	1.860	14 24 57.0	4.98
5	14 47 50.60	1.918	14 24 5.5	5.18	5 13 48.9	14 47 23.61	1.982	14 22 52.1	5.42
6	14 47 3.08	2.041	14 21 55.8	5.62	6 13 44.1	14 46 34.58	2.103	14 20 36.8	5.85
7	14 46 12.65	2.161	14 19 35.6	6.06	7 13 39.3	14 45 42.67	2.222	14 18 11.2	6.28
8	14 45 19.35	2.280	14 17 5.1	6.48	8 13 34.5	14 44 47.95	2.338	14 15 35.4	6.70
9	14 44 23.23	2.396	14 14 24.4	6.90	9 13 29.6	14 43 50.47	2.452	14 12 49.6	7.11
10	14 43 24.36	2.509	14 11 33.6	7.32	10 13 24.7	14 42 50.29	2.562	14 9 53.9	7.53
11	14 42 22.81	2.619	14 8 33.0	7.73	11 13 19.7	14 41 47.49	2.670	14 6 48.4	7.93
12	14 41 18.65	2.726	14 5 22.6	8.13	12 13 14.7	14 40 42.16	2.774	14 3 33.4	8.32
13	14 40 11.97	2.830	14 2 2.7	8.52	13 13 9.6	14 39 34.36	2.875	14 0 9.1	8.70
14	14 39 2.84	2.930	13 58 33.5	8.90	14 13 4.5	14 38 24.18	2.972	13 56 35.8	9.07
15	14 37 51.35	3.026	13 54 55.4	9.27	15 12 59.4	14 37 11.72	3.065	13 52 53.7	9.43
16	14 36 37.61	3.117	13 51 8.6	9.63	16 12 54.2	14 35 57.09	3.153	13 49 3.1	9.78
17	14 35 21.74	3.204	13 47 13.3	9.97	17 12 49.0	14 34 40.40	3.236	13 45 4.3	10.11
18	14 34 3.86	3.285	13 43 9.9	10.30	18 12 43.8	14 33 21.78	3.314	13 40 57.7	10.43
19	14 32 44.09	3.361	13 38 58.9	10.61	19 12 38.5	14 32 1.36	3.386	13 36 43.7	10.73
20	14 31 22.56	3.431	13 34 40.6	10.90	20 12 33.2	14 30 39.27	3.453	13 32 22.8	11.00
21	14 29 59.42	3.495	13 30 15.7	11.17	21 12 27.9	14 29 15.66	3.513	13 27 55.7	11.25
22	14 28 34.83	3.553	13 25 44.7	11.41	22 12 22.5	14 27 50.70	3.566	13 23 22.9	11.48
23	14 27 8.95	3.603	13 21 8.3	11.63	23 12 17.2	14 26 24.53	3.613	13 18 44.8	11.69
24	14 25 41.94	3.646	13 16 26.9	11.82	24 12 11.8	14 24 57.32	3.652	13 14 2.2	11.86
25	14 24 13.98	3.682	13 11 41.3	11.98	25 12 6.4	14 23 29.28	3.683	13 9 15.8	12.00
26	14 22 45.25	3.710	13 6 52.1	12.11	26 12 1.0	14 22 0.58	3.707	13 4 26.2	12.12
27	14 21 15.94	3.731	13 2 0.1	12.21	27 11 55.6	14 20 31.39	3.724	12 59 34.2	12.21
28	14 19 46.22	3.744	12 57 6.1	12.28	28 11 50.1	14 19 1.89	3.733	12 54 40.6	12.25
29	14 18 16.29	3.749	12 52 10.9	12.31	29 11 44.7	14 17 32.26	3.735	12 49 46.2	12.27
30	14 16 46.33	3.746	12 47 15.2	12.32	30 11 39.3	14 16 2.69	3.728	12 44 51.7	12.26
31	14 15 16.53	−3.735	−12 42 19.8	+12.29	31 11 33.9	14 14 33.38	−3.713	−12 39 57.9	+12.21

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	14 15 16.53	-3.735	-12 42 19.8	+12.29	1 11 33.9	14 14 33.38	-3.713	-12 39 57.9	+12.21
2	14 13 47.09	3.717	12 37 25.6	12.22	2 11 28.5	14 13 4.50	3.692	12 35 5.7	12.13
3	14 12 18.17	3.691	12 32 33.5	12.12	3 11 23.1	14 11 36.23	3.662	12 30 15.9	12.01
4	14 10 49.97	3.658	12 27 44.2	11.98	4 11 17.7	14 10 8.75	3.626	12 25 29.3	11.86
5	14 9 22.66	3.617	12 22 58.5	11.81	5 11 12.3	14 8 42.24	3.582	12 20 46.7	11.68
6	14 7 56.40	3.570	12 18 17.3	11.61	6 11 7.0	14 7 16.85	3.532	12 16 8.8	11.47
7	14 6 31.35	3.516	12 13 41.3	11.38	7 11 1.6	14 5 52.72	3.476	12 11 36.4	11.23
8	14 5 7.67	3.456	12 9 11.1	11.12	8 10 56.3	14 4 30.02	3.414	12 7 10.1	10.96
9	14 3 45.51	3.390	12 4 47.5	10.83	9 10 51.1	14 3 8.90	3.345	12 2 50.7	10.66
10	14 2 25.01	3.318	12 0 31.2	10.52	10 10 45.8	14 1 49.48	3.272	11 58 28.8	10.33
11	14 1 6.29	3.241	11 56 22.8	10.18	11 10 40.6	14 0 31.89	3.193	11 54 35.0	9.98
12	13 59 49.50	3.157	11 52 22.8	9.81	12 10 35.4	13 59 16.26	3.108	11 50 39.8	9.61
13	13 58 34.76	3.070	11 48 32.0	9.41	13 10 30.2	13 58 2.72	3.019	11 46 54.0	9.20
14	13 57 22.18	2.978	11 44 51.1	8.99	14 10 25.1	13 56 51.37	2.926	11 43 18.3	8.77
15	13 56 11.86	2.881	11 41 20.4	8.55	15 10 20.0	13 55 42.31	2.828	11 39 53.0	8.33
16	13 55 3.91	2.780	11 38 0.5	8.09	16 10 15.0	13 54 35.64	2.726	11 36 38.6	7.86
17	13 53 58.44	2.675	11 34 52.0	7.61	17 10 10.0	13 53 31.48	2.619	11 33 35.8	7.37
18	13 52 55.56	2.565	11 31 55.5	7.10	18 10 5.0	13 52 29.93	2.509	11 30 45.0	6.86
19	13 51 55.35	2.452	11 29 11.3	6.57	19 10 0.1	13 51 31.06	2.396	11 28 6.7	6.33
20	13 50 57.88	2.336	11 26 40.0	6.03	20 9 55.3	13 50 34.94	2.280	11 25 41.3	5.78
21	13 50 3.23	2.217	11 24 22.0	5.47	21 9 50.5	13 49 41.65	2.160	11 23 29.3	5.21
22	13 49 11.48	2.095	11 22 17.7	4.89	22 9 45.7	13 48 51.27	2.038	11 21 31.1	4.63
23	13 48 22.68	1.971	11 20 27.4	4.30	23 9 41.0	13 48 3.84	1.914	11 19 47.0	4.04
24	13 47 36.89	1.845	11 18 51.5	3.69	24 9 36.3	13 47 19.42	1.787	11 18 17.2	3.43
25	13 46 54.16	1.716	11 17 30.4	3.07	25 9 31.7	13 46 38.06	1.659	11 17 2.3	2.81
26	13 46 14.55	1.585	11 16 24.4	2.44	26 9 27.1	13 45 59.81	1.529	11 16 2.5	2.18
27	13 45 38.08	1.454	11 15 33.6	1.80	27 9 22.6	13 45 24.69	1.398	11 15 17.9	1.54
28	13 45 4.77	1.322	11 14 58.2	1.16	28 9 18.1	13 44 52.72	1.266	11 14 48.7	0.90
29	13 44 34.65	1.188	11 14 38.3	+ 0.50	29 9 13.7	13 44 23.92	1.133	11 14 34.9	+ 0.25
30	13 44 7.73	1.054	11 14 34.2	- 0.16	30 9 9.4	13 43 58.31	1.000	11 14 36.8	- 0.40
31	13 43 44.03	0.921	11 14 45.8	0.81	31 9 5.1	13 43 35.90	0.867	11 14 54.3	1.06
June 1	13 43 23.54	0.787	11 15 13.2	1.47	1 9 0.8	13 43 16.67	0.735	11 15 27.5	1.71
2	13 43 6.24	0.654	11 15 56.2	2.12	2 8 56.6	13 43 0.61	0.603	11 16 16.2	2.36
3	13 42 52.14	0.521	11 16 54.9	2.77	3 8 52.5	13 42 47.73	0.470	11 17 20.6	3.01
4	13 42 41.23	0.388	11 18 9.3	3.42	4 8 48.4	13 42 38.02	0.339	11 18 40.5	3.65
5	13 42 33.48	0.257	11 19 39.3	4.07	5 8 44.3	13 42 31.44	0.210	11 20 15.9	4.29
6	13 42 28.85	-0.128	11 21 24.6	4.70	6 8 40.3	13 42 27.95	-0.082	11 22 6.4	4.91
7	13 42 27.31	0.000	11 23 24.9	5.32	7 8 36.4	13 42 27.51	+0.045	11 24 11.7	5.53
8	13 42 28.83	+0.127	11 25 40.1	5.95	8 8 32.5	13 42 30.11	0.171	11 26 31.9	6.15
9	13 42 33.39	0.253	11 28 10.3	6.57	9 8 28.7	13 42 35.72	0.296	11 29 6.8	6.76
10	13 42 40.97	0.378	11 30 55.2	7.17	10 8 24.9	13 42 44.32	0.420	11 31 56.3	7.36
11	13 42 51.51	0.501	11 33 54.4	7.76	11 8 21.1	13 42 55.87	0.542	11 35 0.1	7.95
12	13 43 4.99	0.623	11 37 7.8	8.35	12 8 17.4	13 43 10.33	0.663	11 38 17.9	8.53
13	13 43 21.39	0.743	11 40 35.2	8.93	13 8 13.8	13 43 27.68	0.782	11 41 49.5	9.10
14	13 43 40.66	0.862	11 44 16.4	9.50	14 8 10.2	13 43 47.87	0.900	11 45 34.8	9.67
15	13 44 2.75	0.979	11 48 11.1	10.06	15 8 6.7	13 44 10.86	1.016	11 49 33.4	10.22
16	13 44 27.63	1.095	11 52 19.1	10.61	16 8 3.2	13 44 36.61	1.130	11 53 45.2	10.76
17	13 44 55.29	1.210	11 56 40.1	11.15	17 7 59.7	13 45 5.11	1.245	11 58 9.9	11.30
18	13 45 25.69	1.323	12 1 14.0	11.68	18 7 56.3	13 45 36.34	1.357	12 2 47.4	11.82
19	13 45 58.79	1.435	12 6 0.6	12.20	19 7 52.9	13 46 10.25	1.468	12 7 37.4	12.34
20	13 46 34.57	1.546	12 10 59.6	12.72	20 7 49.6	13 46 46.81	1.578	12 12 39.8	12.85
21	13 47 12.99	1.655	12 16 10.9	13.22	21 7 46.3	13 47 25.99	1.686	12 17 54.3	13.35
22	13 47 54.01	1.763	12 21 34.1	13.71	22 7 43.1	13 48 7.75	1.794	12 23 20.5	13.84
23	13 48 37.61	1.870	12 27 9.0	14.20	23 7 39.9	13 48 52.07	1.899	12 28 58.4	14.32
24	13 49 23.74	1.975	12 32 55.5	14.68	24 7 36.7	13 49 38.90	2.003	12 34 47.8	14.79
25	13 50 12.38	2.078	12 38 53.3	15.14	25 7 33.6	13 50 28.21	2.166	12 40 48.3	15.25
26	13 51 3.48	2.180	12 45 2.1	15.59	26 7 30.5	13 51 19.97	2.207	12 46 59.7	15.70
27	13 51 57.02	2.281	12 51 21.7	16.03	27 7 27.5	13 52 14.15	2.307	12 53 21.8	16.13
28	13 52 52.96	2.380	12 57 51.7	16.46	28 7 24.5	13 53 10.70	2.405	12 59 54.1	16.55
29	13 53 51.24	2.477	13 4 31.6	16.87	29 7 21.6	13 54 9.58	2.501	13 6 36.2	16.96
30	13 54 51.84	2.572	13 11 21.3	17.27	30 7 18.7	13 55 10.75	2.596	13 13 28.0	17.36
31	13 55 54.71	+2.666	-13 18 29.6	-17.66	31 7 15.8	13 56 14.18	+2.689	-13 20 29.3	-17.75

Date. 1873.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	13 55 54.71	+2.666	−13 18 20.6	−17.66	1 7 15.8	13 56 14.18	+2.689	−13 20 29.3	−17.75
2	13 56 59.81	2.758	13 25 29.2	18.04	2 7 12.9	13 57 19.81	2.780	13 27 39.7	18.12
3	13 58 7.10	2.848	13 32 46.6	18.41	3 7 10.1	13 58 27.62	2.870	13 34 58.9	18.48
4	13 59 16.53	2.937	13 40 12.6	18.76	4 7 7.4	13 59 37.55	2.957	13 42 26.5	18.82
5	14 0 28.07	3.024	13 47 46.8	19.09	5 7 4.6	14 0 49.57	3.044	13 50 2.2	19.15
6	14 1 41.69	3.110	13 55 28.8	19.41	6 7 1.9	14 2 3.65	3.129	13 57 45.6	19.46
7	14 2 57.34	3.195	14 3 18.3	19.72	7 6 59.3	14 3 19.75	3.212	14 5 36.4	19.77
8	14 4 15.00	3.277	14 11 15.1	20.02	8 6 56.6	14 4 37.83	3.294	14 13 34.4	20.06
9	14 5 34.62	3.358	14 19 18.9	20.30	9 6 54.0	14 5 57.87	3.375	14 21 39.2	20.34
10	14 6 56.18	3.438	14 27 29.3	20.57	10 6 51.4	14 7 19.84	3.455	14 29 50.6	20.61
11	14 8 19.65	3.517	14 35 46.1	20.83	11 6 48.9	14 8 43.70	3.533	14 38 8.3	20.86
12	14 9 45.00	3.595	14 44 9.0	21.07	12 6 46.4	14 10 9.42	3.610	14 46 32.0	21.11
13	14 11 12.20	3.671	14 52 37.6	21.31	13 6 43.9	14 11 36.99	3.686	14 55 1.3	21.34
14	14 12 41.22	3.746	15 1 11.8	21.54	14 6 41.5	14 13 6.36	3.761	15 3 36.1	21.56
15	14 14 12.03	3.821	15 9 51.2	21.75	15 6 39.1	14 14 37.52	3.835	15 12 16.0	21.77
16	14 15 44.63	3.895	15 18 35.5	21.95	16 6 36.7	14 16 10.45	3.909	15 21 0.8	21.97
17	14 17 18.99	3.968	15 27 24.6	22.14	17 6 34.3	14 17 45.14	3.981	15 29 50.3	22.16
18	14 18 55.10	4.040	15 36 18.3	22.33	18 6 32.0	14 19 21.56	4.053	15 38 44.3	22.34
19	14 20 32.92	4.111	15 45 16.2	22.50	19 6 29.7	14 20 59.69	4.124	15 47 42.5	22.51
20	14 22 12.44	4.182	15 54 18.2	22.66	20 6 27.4	14 22 39.51	4.194	15 56 44.7	22.67
21	14 23 53.65	4.252	16 3 24.0	22.82	21 6 25.2	14 24 21.01	4.264	16 5 50.6	22.82
22	14 25 36.54	4.321	16 12 33.4	22.96	22 6 23.0	14 26 4.18	4.333	16 15 0.1	22.96
23	14 27 21.08	4.390	16 21 46.1	23.10	23 6 20.8	14 27 48.99	4.401	16 24 12.8	23.09
24	14 29 7.24	4.457	16 31 1.9	23.22	24 6 18.6	14 29 35.42	4.468	16 33 28.5	23.21
25	14 30 55.02	4.524	16 40 20.4	23.32	25 6 16.5	14 31 23.46	4.535	16 42 46.9	23.32
26	14 32 44.39	4.590	16 49 41.4	23.42	26 6 14.4	14 33 13.08	4.600	16 52 7.6	23.41
27	14 34 35.34	4.655	16 59 4.7	23.51	27 6 12.3	14 35 4.27	4.665	17 1 30.6	23.50
28	14 36 27.84	4.719	17 8 30.0	23.59	28 6 10.2	14 36 57.01	4.729	17 10 55.6	23.58
29	14 38 21.87	4.783	17 17 57.0	23.65	29 6 8.2	14 38 51.27	4.792	17 20 22.2	23.64
30	14 40 17.41	4.845	17 27 25.3	23.70	30 6 6.2	14 40 47.03	4.854	17 29 50.0	23.68
31	14 42 14.44	4.907	17 36 54.7	23.74	31 6 4.2	14 42 44.27	4.915	17 39 18.9	23.72
Aug. 1	14 44 12.93	4.967	17 46 24.9	23.77	1 6 2.2	14 44 42.96	4.975	17 48 48.5	23.75
2	14 46 12.86	5.026	17 55 55.8	23.79	2 6 0.3	14 46 43.09	5.035	17 58 18.7	23.76
3	14 48 14.21	5.085	18 5 26.9	23.80	3 5 58.4	14 48 44.63	5.094	18 7 49.0	23.76
4	14 50 16.97	5.144	18 14 57.9	23.79	4 5 56.5	14 50 47.58	5.152	18 17 19.2	23.75
5	14 52 21.12	5.202	18 24 28.5	23.76	5 5 54.6	14 52 51.91	5.209	18 26 48.9	23.73
6	14 54 26.65	5.258	18 33 58.5	23.73	6 5 52.8	14 54 57.61	5.265	18 36 18.0	23.70
7	14 56 33.52	5.314	18 43 27.6	23.69	7 5 51.0	14 57 4.65	5.321	18 45 46.2	23.65
8	14 58 41.73	5.370	18 52 55.7	23.64	8 5 49.2	14 59 13.02	5.376	18 55 13.2	23.60
9	15 0 51.27	5.425	19 2 22.4	23.58	9 5 47.4	15 1 22.72	5.432	19 4 38.9	23.54
10	15 3 2.14	5.480	19 11 47.4	23.50	10 5 45.6	15 3 33.74	5.486	19 14 2.8	23.46
11	15 5 14.30	5.534	19 21 10.5	23.42	11 5 43.9	15 5 46.06	5.540	19 23 24.7	23.37
12	15 7 27.76	5.587	19 30 31.5	23.33	12 5 42.2	15 7 59.67	5.594	19 32 44.5	23.28
13	15 9 42.51	5.641	19 39 50.2	23.22	13 5 40.5	15 10 14.56	5.647	19 42 1.9	23.17
14	15 11 58.53	5.694	19 49 6.3	23.11	14 5 38.8	15 12 30.72	5.700	19 51 16.8	23.06
15	15 14 15.81	5.746	19 58 19.6	22.99	15 5 37.2	15 14 48.14	5.752	20 0 28.7	22.93
16	15 16 34.34	5.798	20 7 29.7	22.86	16 5 35.6	15 17 6.81	5.804	20 9 37.4	22.80
17	15 18 54.14	5.851	20 16 36.6	22.72	17 5 34.0	15 19 26.74	5.856	20 18 42.9	22.66
18	15 21 15.18	5.903	20 25 40.0	22.57	18 5 32.4	15 21 47.91	5.908	20 27 44.9	22.51
19	15 23 37.46	5.954	20 34 39.7	22.41	19 5 30.8	15 24 10.32	5.959	20 36 43.1	22.34
20	15 26 0.97	6.005	20 43 35.4	22.23	20 5 29.3	15 26 33.96	6.010	20 45 37.3	22.17
21	15 28 25.70	6.056	20 52 26.8	22.05	21 5 27.7	15 28 58.81	6.061	20 54 27.2	21.99
22	15 30 51.65	6.106	21 1 13.8	21.87	22 5 26.2	15 31 24.88	6.111	21 3 12.6	21.80
23	15 33 18.80	6.156	21 9 56.2	21.67	23 5 24.7	15 33 52.15	6.161	21 11 53.3	21.60
24	15 35 47.14	6.205	21 18 33.7	21.45	24 5 23.3	15 36 20.61	6.210	21 20 29.1	21.38
25	15 38 16.65	6.254	21 27 5.9	21.23	25 5 21.8	15 38 50.23	6.258	21 28 59.6	21.16
26	15 40 47.33	6.302	21 35 32.6	20.99	26 5 20.4	15 41 21.01	6.306	21 37 24.6	20.92
27	15 43 19.15	6.350	21 43 53.5	20.75	27 5 19.0	15 43 52.94	6.354	21 45 43.7	20.67
28	15 45 52.11	6.397	21 52 8.4	20.49	28 5 17.6	15 46 26.00	6.401	21 53 56.7	20.42
29	15 48 26.18	6.443	22 0 17.1	20.23	29 5 16.2	15 49 0.17	6.447	22 2 3.6	20.15
30	15 51 1.36	6.489	22 8 19.3	19.96	30 5 14.9	15 51 35.44	6.492	22 10 3.9	19.87
31	15 53 37.63	+6.534	−22 16 14.8	−19.67	31 5 13.6	15 54 11.80	+6.537	−22 17 57.4	−19.59

MARS, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	15 56 14.98	+6.578	-22 24 3.3	-19.37	1 5 12.3	15 56 49.24	+6.582	-22 25 43.9	-19.29
2	15 58 53.39	6.622	22 31 44.4	19.06	2 5 11.0	15 59 27.73	6.626	22 33 23.0	18.98
3	16 1 32.84	6.665	22 39 18.1	18.74	3 5 9.7	16 2 7.27	6.669	22 40 54.6	18.66
4	16 4 13.33	6.708	22 46 44.0	18.41	4 5 8.4	16 4 47.83	6.711	22 48 18.4	18.32
5	16 6 54.83	6.750	22 54 1.8	18.07	5 5 7.2	16 7 29.41	6.753	22 55 34.1	17.98
6	16 9 37.34	6.792	23 1 11.3	17.72	6 5 5.9	16 10 12.00	6.795	23 2 41.5	17.63
7	16 12 20.85	6.833	23 8 12.4	17.37	7 5 4.7	16 12 55.58	6.836	23 9 40.4	17.28
8	16 15 5.34	6.874	23 15 4.9	17.00	8 5 3.5	16 15 40.14	6.877	23 16 30.7	16.91
9	16 17 50.81	6.915	23 21 48.5	16.63	9 5 2.3	16 18 25.67	6.917	23 23 12.1	16.54
10	16 20 37.24	6.954	23 28 22.9	16.24	10 5 1.2	16 21 12.17	6.957	23 29 44.3	16.15
11	16 23 24.62	6.994	23 34 48.0	15.85	11 5 0.0	16 23 59.62	6.997	23 36 7.1	15.75
12	16 26 12.95	7.033	23 41 3.6	15.45	12 4 58.9	16 26 48.01	7.036	23 42 20.4	15.35
13	16 29 2.20	7.071	23 47 9.5	15.04	13 4 57.8	16 29 37.32	7.074	23 48 23.9	14.94
14	16 31 52.38	7.110	23 53 5.4	14.62	14 4 56.7	16 32 27.56	7.112	23 54 17.5	14.52
15	16 34 43.48	7.148	23 58 51.2	14.20	15 4 55.6	16 35 18.71	7.150	24 0 0.9	14.10
16	16 37 35.48	7.185	24 4 26.7	13.76	16 4 54.5	16 38 10.77	7.188	24 5 34.0	13.66
17	16 40 28.37	7.222	24 9 51.6	13.31	17 4 53.5	16 41 3.72	7.225	24 10 56.5	13.21
18	16 43 22.15	7.259	24 15 5.7	12.86	18 4 52.4	16 43 57.55	7.261	24 16 8.2	12.76
19	16 46 16.81	7.295	24 20 8.9	12.40	19 4 51.4	16 46 52.26	7.297	24 21 8.9	12.30
20	16 49 12.32	7.330	24 25 1.0	11.94	20 4 50.4	16 49 47.81	7.332	24 25 58.5	11.83
21	16 52 8.66	7.365	24 29 41.8	11.46	21 4 49.4	16 52 44.20	7.367	24 30 36.8	11.36
22	16 55 5.84	7.399	24 34 11.0	10.97	22 4 48.4	16 55 41.42	7.401	24 35 3.5	10.87
23	16 58 3.82	7.433	24 38 28.5	10.48	23 4 47.4	16 58 39.44	7.434	24 39 18.5	10.37
24	17 1 2.60	7.465	24 42 34.0	9.98	24 4 46.5	17 1 38.26	7.466	24 43 21.4	9.87
25	17 4 2.14	7.496	24 46 27.4	9.47	25 4 45.5	17 4 37.83	7.498	24 47 12.2	9.36
26	17 7 2.43	7.527	24 50 8.4	8.95	26 4 44.6	17 7 38.15	7.529	24 50 50.6	8.84
27	17 10 3.46	7.558	24 53 36.9	8.43	27 4 43.7	17 10 39.21	7.559	24 54 16.5	8.31
28	17 13 5.20	7.587	24 56 52.8	7.90	28 4 42.7	17 13 40.97	7.588	24 57 29.7	7.78
29	17 16 7.63	7.615	24 59 55.8	7.35	29 4 41.8	17 16 43.41	7.616	25 0 30.1	7.24
30	17 19 10.72	7.642	25 2 45.7	6.80	30 4 41.0	17 19 46.52	7.643	25 3 17.3	6.69
Oct. 1	17 22 14.47	7.669	25 5 22.4	6.25	1 4 40.1	17 22 50.28	7.670	25 5 51.3	6.14
2	17 25 18.85	7.695	25 7 45.8	5.69	2 4 39.2	17 25 54.67	7.696	25 8 12.0	5.58
3	17 28 23.84	7.720	25 9 55.6	5.13	3 4 38.4	17 28 59.67	7.720	25 10 19.1	5.01
4	17 31 29.41	7.744	25 11 51.8	4.56	4 4 37.5	17 32 5.24	7.744	25 12 12.6	4.44
5	17 34 35.55	7.767	25 13 34.3	3.98	5 4 36.7	17 35 11.38	7.767	25 13 52.4	3.87
6	17 37 42.24	7.790	25 15 2.9	3.40	6 4 35.8	17 38 18.07	7.790	25 15 18.3	3.28
7	17 40 49.47	7.812	25 16 17.4	2.81	7 4 35.0	17 41 25.29	7.811	25 16 30.0	2.69
8	17 43 57.21	7.833	25 17 17.7	2.21	8 4 34.2	17 44 33.02	7.832	25 17 27.6	2.10
9	17 47 5.45	7.854	25 18 3.7	1.62	9 4 33.4	17 47 41.25	7.853	25 18 10.8	1.50
10	17 50 14.18	7.874	25 18 35.3	1.02	10 4 32.6	17 50 49.96	7.873	25 18 39.6	0.90
11	17 53 23.37	7.893	25 18 52.4	- 0.41	11 4 31.8	17 53 59.14	7.892	25 18 54.0	- 0.30
12	17 56 33.01	7.911	25 18 55.0	+ 0.20	12 4 31.0	17 57 8.76	7.910	25 18 53.9	+ 0.31
13	17 59 43.09	7.929	25 18 43.0	0.81	13 4 30.3	18 0 18.81	7.928	25 18 39.1	0.92
14	18 2 53.59	7.946	25 18 16.2	1.43	14 4 29.5	18 3 29.29	7.945	25 18 9.5	1.54
15	18 6 4.49	7.962	25 17 34.5	2.05	15 4 28.7	18 6 40.16	7.961	25 17 25.1	2.16
16	18 9 15.77	7.978	25 16 37.8	2.68	16 4 28.0	18 9 51.41	7.976	25 16 25.6	2.79
17	18 12 27.42	7.993	25 15 26.1	3.30	17 4 27.2	18 13 3.02	7.991	25 15 11.2	3.42
18	18 15 39.41	8.007	25 13 59.4	3.93	18 4 26.5	18 16 14.98	8.005	25 13 41.7	4.05
19	18 18 51.74	8.020	25 12 17.5	4.56	19 4 25.8	18 19 27.27	8.018	25 11 57.0	4.68
20	18 22 4.37	8.032	25 10 20.4	5.20	20 4 25.0	18 22 39.86	8.030	25 9 57.2	5.31
21	18 25 17.29	8.044	25 8 8.0	5.84	21 4 24.3	18 25 52.73	8.041	25 7 42.0	5.95
22	18 28 30.47	8.054	25 5 40.2	6.48	22 4 23.6	18 29 5.86	8.052	25 5 11.5	6.59
23	18 31 43.89	8.064	25 2 57.0	7.12	23 4 22.9	18 32 19.22	8.061	25 2 25.6	7.23
24	18 34 57.52	8.073	24 59 58.5	7.76	24 4 22.2	18 35 32.79	8.070	24 59 24.3	7.87
25	18 38 11.36	8.081	24 56 44.5	8.40	25 4 21.4	18 38 46.57	8.078	24 56 7.6	8.52
26	18 41 25.38	8.088	24 53 15.1	9.05	26 4 20.7	18 42 0.52	8.084	24 52 35.5	9.16
27	18 44 39.55	8.093	24 49 30.2	9.69	27 4 20.0	18 45 14.62	8.090	24 48 47.9	9.81
28	18 47 53.84	8.098	24 45 29.8	10.34	28 4 19.3	18 48 28.84	8.095	24 44 44.8	10.45
29	18 51 8.24	8.102	24 41 13.8	10.99	29 4 18.6	18 51 43.16	8.098	24 40 26.2	11.10
30	18 54 22.72	8.105	24 36 42.4	11.63	30 4 17.9	18 54 57.56	8.101	24 35 52.1	11.74
31	18 57 37.26	8.107	24 31 55.5	12.27	31 4 17.2	18 58 12.02	8.103	24 31 2.6	12.38
32	19 0 51.85	+8.109	-24 26 53.2	+12.92	32 4 16.5	19 1 26.52	+8.105	-24 25 57.7	+13.02

Date. 1873.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	19 0 51.85	+8.109	-24 26 53.2	+12.92	1 4 16.5	19 1 26.52	+8.105	-24 25 57.7	+13.02
2	19 4 6.46	8.109	24 21 35.4	13.56	2 4 15.8	19 4 41.04	8.105	24 20 37.4	13.67
3	19 7 21.07	8.108	24 16 2.3	14.20	3 4 15.1	19 7 55.55	8.104	24 15 1.7	14.31
4	19 10 35.66	8.107	24 10 13.8	14.84	4 4 14.4	19 11 10.04	8.103	24 9 10.6	14.95
5	19 13 50.23	8.106	24 4 10.0	15.48	5 4 13.7	19 14 24.51	8.102	24 3 4.3	15.58
6	19 17 4.75	8.104	23 57 51.0	16.11	6 4 13.0	19 17 38.93	8.099	23 56 42.8	16.21
7	19 20 19.21	8.101	23 51 16.9	16.74	7 4 12.3	19 20 53.28	8.096	23 50 6.2	16.84
8	19 23 33.58	8.097	23 44 27.6	17.37	8 4 11.6	19 24 7.54	8.092	23 43 14.5	17.47
9	19 26 47.86	8.093	23 37 23.2	18.00	9 4 10.9	19 27 21.70	8.088	23 36 7.7	18.10
10	19 30 2.03	8.088	23 30 3.7	18.62	10 4 10.2	19 30 35.76	8.083	23 28 45.8	18.72
11	19 33 16.09	8.083	23 22 29.3	19.24	11 4 9.5	19 33 49.70	8.078	23 21 9.0	19.34
12	19 36 30.03	8.078	23 14 40.0	19.86	12 4 8.8	19 37 3.52	8.073	23 13 17.4	19.96
13	19 39 43.82	8.071	23 6 36.0	20.48	13 4 8.1	19 40 17.19	8.066	23 5 11.1	20.57
14	19 42 57.45	8.064	22 58 17.2	21.09	14 4 7.4	19 43 30.70	8.059	22 56 50.0	21.18
15	19 46 10.91	8.057	22 49 43.8	21.69	15 4 6.7	19 46 44.03	8.052	22 48 14.4	21.79
16	19 49 24.19	8.049	22 40 55.9	22.30	16 4 5.9	19 49 57.18	8.044	22 39 24.3	22.39
17	19 52 37.27	8.041	22 31 53.5	22.90	17 4 5.2	19 53 10.13	8.035	22 30 19.7	22.99
18	19 55 50.15	8.032	22 22 36.8	23.49	18 4 4.5	19 56 22.87	8.026	22 21 0.9	23.58
19	19 59 2.80	8.022	22 13 5.9	24.08	19 4 3.7	19 59 35.39	8.017	22 11 27.8	24.17
20	20 2 15.22	8.012	22 3 20.8	24.67	20 4 3.0	20 2 47.67	8.006	22 1 40.7	24.75
21	20 5 27.39	8.001	21 53 21.8	25.25	21 4 2.3	20 5 59.70	7.995	21 51 39.6	25.33
22	20 8 39.29	7.990	21 43 8.9	25.82	22 4 1.5	20 9 11.45	7.984	21 41 24.7	25.91
23	20 11 50.91	7.978	21 32 42.2	26.39	23 4 0.8	20 12 22.92	7.972	21 30 56.1	26.47
24	20 15 2.25	7.966	21 22 2.0	26.95	24 4 0.0	20 15 34.11	7.960	21 20 14.0	27.03
25	20 18 13.28	7.953	21 11 8.4	27.51	25 3 59.3	20 18 44.99	7.947	21 9 18.5	27.59
26	20 21 23.99	7.939	21 0 1.5	28.06	26 3 58.5	20 21 55.54	7.933	20 58 9.8	28.14
27	20 24 34.36	7.925	20 48 41.4	28.61	27 3 57.7	20 25 5.76	7.919	20 46 47.9	28.68
28	20 27 44.40	7.911	20 37 8.4	29.14	28 3 57.0	20 28 15.64	7.904	20 35 13.1	29.21
29	20 30 54.08	7.896	20 25 22.7	29.67	29 3 56.2	20 31 25.16	7.889	20 23 25.7	29.74
30	20 34 3.40	7.881	20 13 24.3	30.19	30 3 55.4	20 34 34.31	7.874	20 11 25.7	30.26
Dec. 1	20 37 12.35	7.865	20 1 13.4	30.71	1 3 54.6	20 37 43.10	7.858	19 59 13.2	30.77
2	20 40 20.93	7.849	19 48 50.3	31.22	2 3 53.8	20 40 51.51	7.842	19 46 48.5	31.28
3	20 43 29.12	7.833	19 36 15.0	31.72	3 3 53.0	20 43 59.54	7.826	19 34 11.7	31.78
4	20 46 36.93	7.817	19 23 27.7	32.22	4 3 52.2	20 47 7.17	7.810	19 21 22.9	32.28
5	20 49 44.34	7.801	19 10 28.6	32.70	5 3 51.3	20 50 14.41	7.794	19 8 22.4	32.76
6	20 52 51.36	7.784	18 57 18.0	33.18	6 3 50.5	20 53 21.26	7.777	18 55 10.4	33.24
7	20 55 57.98	7.767	18 43 56.0	33.65	7 3 49.7	20 56 27.71	7.760	18 41 47.6	33.71
8	20 59 4.19	7.750	18 30 22.7	34.12	8 3 48.8	20 59 33.75	7.743	18 28 12.4	34.17
9	21 2 10.00	7.734	18 16 38.3	34.58	9 3 48.0	21 2 39.38	7.726	18 14 26.8	34.63
10	21 5 15.41	7.717	18 2 42.9	35.03	10 3 47.1	21 5 44.62	7.710	18 0 30.2	35.08
11	21 8 20.41	7.700	17 48 36.8	35.47	11 3 46.3	21 8 49.45	7.693	17 46 22.9	35.52
12	21 11 25.01	7.683	17 34 20.1	35.91	12 3 45.4	21 11 53.87	7.676	17 32 5.1	35.96
13	21 14 29.20	7.666	17 19 53.1	36.34	13 3 44.5	21 14 57.89	7.659	17 17 37.0	36.39
14	21 17 32.99	7.649	17 5 15.8	36.76	14 3 43.7	21 18 1.50	7.642	17 2 58.6	36.81
15	21 20 36.37	7.632	16 50 28.5	37.18	15 3 42.8	21 21 4.70	7.625	16 48 10.3	37.22
16	21 23 39.34	7.615	16 35 31.3	37.59	16 3 41.9	21 24 7.50	7.608	16 33 12.2	37.62
17	21 26 41.90	7.598	16 20 24.5	37.98	17 3 41.0	21 27 9.88	7.591	16 18 4.5	38.02
18	21 29 44.06	7.581	16 5 8.3	38.37	18 3 40.1	21 30 11.86	7.574	16 2 47.4	38.40
19	21 32 45.81	7.564	15 49 42.8	38.75	19 3 39.2	21 33 13.43	7.557	15 47 21.1	38.78
20	21 35 47.14	7.547	15 34 8.2	39.13	20 3 38.2	21 36 14.59	7.540	15 31 45.8	39.16
21	21 38 48.06	7.529	15 18 24.7	39.49	21 3 37.3	21 39 15.33	7.522	15 16 1.6	39.52
22	21 41 48.55	7.512	15 2 32.6	39.85	22 3 36.4	21 42 15.64	7.504	15 0 8.8	39.88
23	21 44 48.63	7.495	14 46 32.0	40.20	23 3 35.4	21 45 15.54	7.487	14 44 7.6	40.22
24	21 47 48.30	7.477	14 30 23.3	40.53	24 3 34.5	21 48 15.03	7.470	14 27 58.3	40.55
25	21 50 47.55	7.460	14 14 6.5	40.86	25 3 33.5	21 51 14.09	7.452	14 11 41.0	40.88
26	21 53 46.37	7.442	13 57 41.9	41.18	26 3 32.6	21 54 12.73	7.435	13 55 15.9	41.20
27	21 56 44.78	7.425	13 41 9.8	41.49	27 3 31.6	21 57 10.96	7.417	13 38 43.4	41.51
28	21 59 42.77	7.407	13 24 30.3	41.80	28 3 30.6	22 0 8.77	7.400	13 22 3.5	41.81
29	22 2 40.34	7.390	13 7 43.6	42.09	29 3 29.6	22 3 6.16	7.382	13 5 16.5	42.10
30	22 5 37.49	7.373	12 50 50.1	42.37	30 3 28.7	22 6 3.13	7.365	12 48 22.7	42.38
31	22 8 34.24	7.356	12 33 49.8	42.65	31 3 27.7	22 8 59.69	7.349	12 31 22.1	42.66
32	22 11 30.59	+7.339	-12 16 43.0	+42.92	32 3 26.7	22 11 55.86	+7.332	-12 14 15.1	+42.93

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	10 14 12.52	−0.437	+12 3 4.0	+ 3.13	0 15 29.8	10 14 5.59	−0.453	+12 3 53.2	+ 3.22
1	10 14 1.67	0.467	12 4 21.0	3.29	1 15 25.7	10 13 54.29	0.485	12 5 12.6	3.39
2	10 13 50.09	0.498	12 5 42.0	3.44	2 15 21.6	10 13 42.30	0.514	12 6 35.8	3.55
3	10 13 37.80	0.527	12 7 6.8	3.61	3 15 17.4	10 13 29.61	0.543	12 8 2.8	3.71
4	10 13 24.81	0.556	12 8 35.3	3.77	4 15 13.3	10 13 16.22	0.572	12 9 33.4	3.86
5	10 13 11.13	0.585	12 10 7.5	3.93	5 15 9.1	10 13 2.14	0.601	12 11 7.7	4.01
6	10 12 56.75	0.613	12 11 43.5	4.08	6 15 4.9	10 12 47.39	0.629	12 12 45.7	4.16
7	10 12 41.70	0.641	12 13 23.1	4.23	7 15 0.7	10 12 31.97	0.657	12 14 27.2	4.31
8	10 12 25.99	0.669	12 15 6.2	4.38	8 14 56.5	10 12 15.88	0.684	12 16 12.2	4.45
9	10 12 9.61	0.696	12 16 52.9	4.52	9 14 52.3	10 11 59.14	0.711	12 18 0.7	4.59
10	10 11 52.58	0.723	12 18 43.0	4.66	10 14 48.1	10 11 41.76	0.738	12 19 52.6	4.73
11	10 11 34.90	0.750	12 20 36.5	4.80	11 14 43.9	10 11 23.74	0.764	12 21 47.7	4.87
12	10 11 16.59	0.776	12 22 33.2	4.93	12 14 39.7	10 11 5.10	0.790	12 23 46.0	5.00
13	10 10 57.65	0.802	12 24 33.1	5.06	13 14 35.5	10 10 45.84	0.815	12 25 47.4	5.13
14	10 10 38.10	0.827	12 26 36.0	5.19	14 14 31.2	10 10 25.98	0.840	12 27 51.9	5.25
15	10 10 17.94	0.852	12 28 42.0	5.31	15 14 26.9	10 10 5.52	0.864	12 29 59.3	5.37
16	10 9 57.19	0.876	12 30 51.0	5.43	16 14 22.6	10 9 44.48	0.888	12 32 9.6	5.49
17	10 9 35.87	0.900	12 33 2.8	5.55	17 14 18.3	10 9 22.88	0.912	12 34 22.7	5.60
18	10 9 13.98	0.923	12 35 17.4	5.66	18 14 14.0	10 9 0.73	0.935	12 36 38.5	5.71
19	10 8 51.54	0.946	12 37 34.7	5.77	19 14 9.7	10 8 38.04	0.957	12 38 57.0	5.81
20	10 8 28.55	0.969	12 39 54.7	5.88	20 14 5.4	10 8 14.81	0.979	12 41 18.1	5.92
21	10 8 5.03	0.991	12 42 17.2	5.98	21 14 1.1	10 7 51.06	1.000	12 43 41.6	6.02
22	10 7 41.00	1.012	12 44 42.1	6.08	22 13 56.7	10 7 26.81	1.021	12 46 7.4	6.12
23	10 7 16.47	1.032	12 47 9.4	6.18	23 13 52.3	10 7 2.07	1.041	12 48 35.5	6.21
24	10 6 51.46	1.051	12 49 38.9	6.27	24 13 48.0	10 6 36.87	1.060	12 51 5.7	6.30
25	10 6 25.99	1.070	12 52 10.5	6.35	25 13 43.7	10 6 11.22	1.078	12 53 37.9	6.38
26	10 6 0.07	1.088	12 54 44.0	6.43	26 13 39.3	10 5 45.13	1.096	12 56 12.1	6.46
27	10 5 33.72	1.105	12 57 19.4	6.51	27 13 34.9	10 5 18.63	1.113	12 58 48.1	6.53
28	10 5 6.97	1.122	12 59 56.6	6.58	28 13 30.5	10 4 51.73	1.129	13 1 25.8	6.60
29	10 4 39.83	1.138	13 2 35.4	6.64	29 13 26.1	10 4 24.46	1.144	13 4 5.0	6.66
30	10 4 12.32	1.153	13 5 15.7	6.70	30 13 21.7	10 3 56.84	1.158	13 6 45.6	6.72
31	10 3 44.46	1.167	13 7 57.4	6.76	31 13 17.3	10 3 28.89	1.171	13 9 27.5	6.77
Feb. 1	10 3 16.27	1.181	13 10 40.4	6.81	1 13 12.9	10 3 0.62	1.184	13 12 10.6	6.82
2	10 2 47.78	1.193	13 13 24.5	6.86	2 13 8.5	10 2 32.06	1.196	13 14 54.7	6.86
3	10 2 19.00	1.205	13 16 9.6	6.90	3 13 4.1	10 2 3.22	1.207	13 17 39.8	6.90
4	10 1 49.96	1.216	13 18 55.7	6.94	4 12 59.7	10 1 34.13	1.217	13 20 25.9	6.93
5	10 1 20.67	1.225	13 21 42.6	6.97	5 12 55.3	10 1 4.81	1.226	13 23 12.7	6.96
6	10 0 51.17	1.233	13 24 30.1	6.99	6 12 50.9	10 0 35.29	1.234	13 26 0.0	6.98
7	10 0 21.47	1.241	13 27 18.1	7.01	7 12 46.5	10 0 5.58	1.242	13 28 47.7	6.99
8	9 59 51.58	1.248	13 30 6.5	7.02	8 12 42.0	9 59 35.70	1.248	13 31 35.7	7.00
9	9 59 21.54	1.254	13 32 55.1	7.03	9 12 37.6	9 59 5.67	1.254	13 34 23.9	7.01
10	9 58 51.36	1.260	13 35 43.8	7.03	10 12 33.2	9 58 35.52	1.259	13 37 12.1	7.01
11	9 58 21.06	1.264	13 38 32.5	7.03	11 12 28.8	9 58 5.26	1.263	13 40 0.2	7.00
12	9 57 50.67	1.268	13 41 21.1	7.02	12 12 24.3	9 57 34.93	1.266	13 42 48.2	6.99
13	9 57 20.21	1.271	13 44 9.5	7.01	13 12 19.9	9 57 4.54	1.268	13 45 35.9	6.98
14	9 56 49.70	1.272	13 46 57.5	7.00	14 12 15.4	9 56 34.11	1.269	13 48 23.2	6.96
15	9 56 19.16	1.273	13 49 45.1	6.98	15 12 10.9	9 56 3.66	1.269	13 51 10.0	6.94
16	9 55 48.61	1.273	13 52 32.1	6.95	16 12 6.5	9 55 33.20	1.268	13 53 56.2	6.91
17	9 55 18.08	1.272	13 55 18.5	6.92	17 12 2.0	9 55 2.77	1.267	13 56 41.6	6.87
18	9 54 47.59	1.270	13 58 4.0	6.88	18 11 57.6	9 54 32.39	1.265	13 59 26.1	6.83
19	9 54 17.15	1.267	14 0 48.6	6.84	19 11 53.2	9 54 2.07	1.261	14 2 9.7	6.79
20	9 53 46.79	1.263	14 3 32.2	6.79	20 11 48.8	9 53 31.85	1.256	14 4 52.3	6.74
21	9 53 16.53	1.258	14 6 14.6	6.74	21 11 44.3	9 53 1.75	1.251	14 7 33.6	6.69
22	9 52 46.40	1.252	14 8 55.7	6.68	22 11 39.9	9 52 31.79	1.245	14 10 13.6	6.63
23	9 52 16.42	1.245	14 11 35.5	6.62	23 11 35.5	9 52 1.99	1.238	14 12 52.1	6.57
24	9 51 46.61	1.238	14 14 13.7	6.56	24 11 31.1	9 51 32.37	1.230	14 15 29.1	6.51
25	9 51 16.99	1.229	14 16 50.3	6.49	25 11 26.6	9 51 2.94	1.221	14 18 4.4	6.44
26	9 50 47.59	1.219	14 19 25.2	6.42	26 11 22.2	9 50 33.74	1.211	14 20 38.0	6.37
27	9 50 18.44	1.209	14 21 58.3	6.34	27 11 17.8	9 50 4.89	1.200	14 23 9.7	6.29
28	9 49 49.55	1.198	14 24 29.4	6.25	28 11 13.4	9 49 36.13	1.189	14 25 39.4	6.20
29	9 49 20.94	1.186	14 26 58.5	6.16	29 11 9.0	9 49 7.74	1.177	14 28 7.1	6.11
30	9 48 52.63	-1.173	+14 29 25.5	+ 6.07	30 11 4.6	9 48 39.66	−1.163	+14 30 32.7	+ 6.02

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	9 49 20.94	-1.186	+14 26 58.5	+ 6.16	1 11 9.0	9 49 7.74	-1.177	+14 28 7.1	+ 6.11
2	9 48 52.63	1.173	14 29 25.5	6.07	2 11 4.6	9 48 39.66	1.163	14 30 32.7	6.02
3	9 48 24.64	1.159	14 31 50.4	5.98	4 11 0.2	9 48 11.91	1.149	14 32 56.0	5.92
4	9 47 57.00	1.144	14 34 12.9	5.89	4 10 55.9	9 47 44.52	1.134	14 35 7.0	5.82
5	9 47 29.73	1.128	14 36 33.0	5.79	5 10 51.5	9 47 17.50	1.118	14 37 35.6	5.72
6	9 47 2.85	1.112	14 38 50.5	5.69	6 10 47.1	9 46 50.88	1.101	14 39 51.5	5.61
7	9 46 36.37	1.095	14 41 5.4	5.58	7 10 42.7	9 46 24.67	1.084	14 42 4.8	5.50
8	9 46 10.30	1.077	14 43 17.7	5.46	8 10 38.4	9 45 58.88	1.066	14 44 15.5	5.39
9	9 45 44.67	1.059	14 45 27.3	5.34	9 10 34.0	9 45 33.52	1.047	14 46 23.5	5.27
10	9 45 19.49	1.040	14 47 34.1	5.22	10 10 29.7	9 45 8.61	1.028	14 48 28.6	5.15
11	9 44 54.77	1.020	14 49 38.0	5.10	11 10 25.4	9 44 44.18	1.008	14 50 30.8	5.03
12	9 44 30.54	0.999	14 51 38.9	4.98	12 10 21.1	9 44 20.24	0.987	14 52 30.1	4.91
13	9 44 6.81	0.978	14 53 36.8	4.86	13 10 16.7	9 43 56.80	0.966	14 54 26.4	4.78
14	9 43 43.59	0.957	14 55 31.6	4.73	14 10 12.4	9 43 33.87	0.944	14 56 19.6	4.65
15	9 43 20.90	0.935	14 57 23.4	4.60	15 10 8.1	9 43 11.47	0.922	14 58 9.7	4.52
16	9 42 58.74	0.912	14 59 12.1	4.46	16 10 3.8	9 42 49.61	0.899	14 59 56.7	4.39
17	9 42 37.14	0.889	15 0 57.6	4.33	17 9 59.5	9 42 28.31	0.876	15 1 40.5	4.26
18	9 42 16.10	0.865	15 2 39.9	4.19	18 9 55.2	9 42 7.57	0.852	15 3 21.2	4.13
19	9 41 55.64	0.840	15 4 18.9	4.05	19 9 50.9	9 41 47.41	0.827	15 4 58.6	3.99
20	9 41 35.77	0.815	15 5 54.6	3.91	20 9 46.7	9 41 28.84	0.802	15 6 32.6	3.85
21	9 41 16.50	0.790	15 7 26.9	3.77	21 9 42.4	9 41 8.88	0.777	15 8 3.3	3.71
22	9 40 57.85	0.764	15 8 55.8	3.63	22 9 38.1	9 40 50.53	0.751	15 9 30.5	3.57
23	9 40 39.82	0.738	15 10 21.2	3.49	23 9 33.9	9 40 32.81	0.725	15 10 54.3	3.42
24	9 40 22.43	0.711	15 11 43.2	3.34	24 9 29.7	9 40 15.73	0.698	15 12 14.7	3.28
25	9 40 5.68	0.684	15 13 1.7	3.20	25 9 25.5	9 39 59.29	0.671	15 13 31.5	3.13
26	9 39 49.59	0.656	15 14 16.6	3.05	26 9 21.3	9 39 43.51	0.644	15 14 44.8	2.98
27	9 39 34.17	0.628	15 15 27.9	2.90	27 9 17.1	9 39 28.39	0.616	15 15 54.5	2.83
28	9 39 19.43	0.600	15 16 35.6	2.75	28 9 13.0	9 39 13.95	0.588	15 17 0.6	2.68
29	9 39 5.37	0.572	15 17 39.7	2.60	29 9 8.8	9 39 0.19	0.559	15 18 3.1	2.53
30	9 38 52.00	0.543	15 18 40.1	2.45	30 9 4.6	9 38 47.12	0.530	15 19 1.9	2.38
31	9 38 39.33	0.514	15 19 36.7	2.30	31 9 0.5	9 38 34.75	0.501	15 19 57.0	2.22
Apr. 1	9 38 27.36	0.484	15 20 29.7	2.14	1 8 56.4	9 38 23.08	0.472	15 20 48.5	2.05
2	9 38 16.11	0.454	15 21 19.0	1.99	2 8 52.3	9 38 12.13	0.442	15 21 36.3	1.91
3	9 38 5.58	0.424	15 22 4.6	1.83	3 8 48.2	9 38 1.89	0.412	15 22 20.4	1.76
4	9 37 55.76	0.394	15 22 46.4	1.67	4 8 44.1	9 37 52.36	0.382	15 23 0.7	1.60
5	9 37 46.66	0.364	15 23 24.5	1.51	5 8 40.0	9 37 43.55	0.352	15 23 37.3	1.45
6	9 37 38.28	0.334	15 23 58.8	1.36	6 8 35.9	9 37 35.45	0.322	15 24 10.2	1.29
7	9 37 30.63	0.304	15 24 29.4	1.20	7 8 31.8	9 37 28.08	0.292	15 24 39.4	1.14
8	9 37 23.70	0.274	15 24 56.3	1.05	8 8 27.8	9 37 21.43	0.262	15 25 4.9	0.98
9	9 37 17.50	0.243	15 25 19.4	0.89	9 8 23.8	9 37 15.50	0.232	15 25 26.6	0.83
10	9 37 12.03	0.213	15 25 38.8	0.74	10 8 19.8	9 37 10.30	0.202	15 25 44.6	0.67
11	9 37 7.29	0.182	15 25 54.5	0.58	11 8 15.8	9 37 5.83	0.172	15 25 59.0	0.52
12	9 37 3.29	0.152	15 26 6.6	0.42	12 8 11.8	9 37 2.09	0.141	15 26 9.8	0.36
13	9 37 0.02	0.121	15 26 15.0	0.27	13 8 7.8	9 36 59.08	0.111	15 26 16.9	0.21
14	9 36 57.48	0.090	15 26 19.7	+ 0.11	14 8 3.8	9 36 56.79	0.080	15 26 20.4	+ 0.06
15	9 36 55.67	0.060	15 26 20.7	- 0.04	15 7 59.8	9 36 55.23	0.050	15 26 20.2	- 0.09
16	9 36 54.59	-0.030	15 26 18.0	0.19	16 7 55.9	9 36 54.39	-0.020	15 26 16.3	0.24
17	9 36 54.23	0.000	15 26 11.6	0.34	17 7 52.0	9 36 54.27	+0.010	15 26 8.7	0.39
18	9 36 54.60	+0.030	15 26 1.6	0.50	18 7 48.1	9 36 54.88	0.040	15 25 57.5	0.54
19	9 36 55.70	0.060	15 25 48.0	0.65	19 7 44.2	9 36 56.21	0.070	15 25 42.8	0.69
20	9 36 57.53	0.090	15 25 30.7	0.80	20 7 40.3	9 36 58.26	0.100	15 25 24.4	0.84
21	9 37 0.08	0.121	15 25 9.8	0.95	21 7 36.4	9 37 1.04	0.130	15 25 2.4	0.99
22	9 37 3.36	0.151	15 24 45.2	1.10	22 7 32.5	9 37 4.54	0.160	15 24 36.7	1.14
23	9 37 7.37	0.182	15 24 17.0	1.25	23 7 28.6	9 37 8.76	0.190	15 24 7.5	1.29
24	9 37 12.09	0.212	15 23 45.3	1.40	24 7 21.8	9 37 13.69	0.220	15 23 34.8	1.44
25	9 37 17.53	0.242	15 23 10.0	1.55	25 7 21.0	9 37 19.34	0.250	15 22 58.5	1.59
26	9 37 23.69	0.272	15 22 31.1	1.70	26 7 17.2	9 37 25.70	0.279	15 22 18.6	1.73
27	9 37 30.56	0.301	15 21 48.7	1.84	27 7 13.4	9 37 32.76	0.309	15 21 35.3	1.88
28	9 37 38.14	0.331	15 21 2.8	1.99	28 7 9.6	9 37 40.53	0.338	15 20 48.4	2.02
29	9 37 46.42	0.360	15 20 13.4	2.13	29 7 5.8	9 37 49.00	0.367	15 19 58.1	2.17
30	9 37 55.40	0.389	15 19 20.5	2.28	30 7 2.0	9 37 58.16	0.396	15 19 4.3	2.31
31	9 38 5.07	+0.418	+15 18 24.1	- 2.42	31 6 58.2	9 38 8.00	+0.425	+15 18 7.0	- 2.45

JUPITER, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	9 38 5.07	+0.418	+15 18 24.1	− 2.42	1 6 58.2	9 38 8.00	+0.425	+15 18 7.0	− 2.45
2	9 38 15.44	0.446	15 17 24.3	2.57	2 6 54.4	9 38 18.54	0.453	15 17 6.4	2.60
3	9 38 26.49	0.475	15 16 21.0	2.71	3 6 50.7	9 38 29.76	0.481	15 16 2.3	2.74
4	9 38 38.22	0.503	15 15 14.3	2.85	4 6 46.9	9 38 41.65	0.509	15 14 54.8	2.88
5	9 38 50.62	0.531	15 14 4.2	2.99	5 6 43.2	9 38 54.21	0.537	15 13 44.0	3.02
6	9 39 3.69	0.558	15 12 50.8	3.13	6 6 39.5	9 39 7.43	0.565	15 12 29.8	3.16
7	9 39 17.42	0.585	15 11 34.1	3.26	7 6 35.8	9 39 21.31	0.592	15 11 12.4	3.30
8	9 39 31.80	0.612	15 10 14.1	3.40	8 6 32.1	9 39 35.83	0.619	15 9 51.7	3.43
9	9 39 46.82	0.639	15 8 50.8	3.53	9 6 28.4	9 39 50.98	0.645	15 8 27.7	3.57
10	9 40 2.48	0.666	15 7 24.2	3.67	10 6 24.7	9 40 6.77	0.671	15 7 0.5	3.70
11	9 40 18.77	0.692	15 5 54.5	3.80	11 6 21.1	9 40 23.19	0.697	15 5 30.2	3.83
12	9 40 35.69	0.718	15 4 21.6	3.94	12 6 17.4	9 40 40.23	0.723	15 3 56.7	3.96
13	9 40 52.23	0.744	15 2 45.5	4.07	13 6 13.8	9 40 57.88	0.748	15 2 20.0	4.09
14	9 41 11.39	0.769	15 1 6.2	4.20	14 6 10.2	9 41 16.15	0.773	15 0 40.2	4.22
15	9 41 30.16	0.794	14 59 23.9	4.33	15 6 6.6	9 41 35.03	0.798	14 58 57.4	4.35
16	9 41 49.53	0.819	14 57 38.5	4.46	16 6 3.0	9 41 54.50	0.823	14 57 11.5	4.48
17	9 42 9.49	0.844	14 55 50.0	4.59	17 5 59.4	9 42 14.56	0.848	14 55 22.5	4.61
18	9 42 30.05	0.869	14 53 58.4	4.72	18 5 55.8	9 42 35.21	0.873	14 53 30.4	4.73
19	9 42 51.19	0.893	14 52 3.8	4.84	19 5 52.2	9 42 56.45	0.897	14 51 35.3	4.86
20	9 43 12.91	0.917	14 50 6.2	4.97	20 5 48.6	9 43 18.26	0.921	14 49 37.2	4.98
21	9 43 35.21	0.941	14 48 5.6	5.09	21 5 45.0	9 43 40.64	0.944	14 47 36.2	5.11
22	9 43 58.08	0.964	14 46 2.0	5.21	22 5 41.5	9 44 3.58	0.967	14 45 32.2	5.23
23	9 44 21.50	0.987	14 43 55.5	5.33	23 5 38.0	9 44 27.08	0.990	14 43 25.4	5.35
24	9 44 45.48	1.010	14 41 46.1	5.45	24 5 34.4	9 44 51.13	1.013	14 41 15.6	5.47
25	9 45 10.01	1.033	14 39 33.8	5.57	25 5 30.9	9 45 15.72	1.036	14 39 2.9	5.59
26	9 45 35.08	1.056	14 37 18.5	5.69	26 5 27.4	9 45 40.85	1.058	14 36 47.4	5.71
27	9 46 0.68	1.078	14 35 0.4	5.81	27 5 23.9	9 46 6.51	1.080	14 34 29.0	5.83
28	9 46 26.81	1.100	14 32 39.5	5.93	28 5 20.4	9 46 32.69	1.102	14 32 7.8	5.94
29	9 46 53.46	1.121	14 30 15.8	6.04	29 5 16.9	9 46 59.39	1.123	14 29 43.8	6.06
30	9 47 20.63	1.142	14 27 49.2	6.16	30 5 13.4	9 47 26.60	1.144	14 27 17.0	6.17
31	9 47 48.30	1.163	14 25 19.9	6.27	31 5 10.0	9 47 54.32	1.165	14 24 47.4	6.29
June 1	9 48 16.47	1.183	14 22 47.9	6.39	1 5 6.5	9 48 22.53	1.185	14 22 15.1	6.40
2	9 48 45.13	1.204	14 20 13.1	6.50	2 5 3.0	9 48 51.22	1.205	14 19 40.2	6.51
3	9 49 14.27	1.224	14 17 35.7	6.61	3 4 59.6	9 49 20.39	1.225	14 17 2.7	6.62
4	9 49 43.89	1.244	14 14 55.7	6.72	4 4 56.2	9 49 50.03	1.244	14 14 22.5	6.73
5	9 50 13.97	1.263	14 12 13.1	6.83	5 4 52.8	9 50 20.14	1.263	14 11 39.7	6.84
6	9 50 44.51	1.282	14 9 27.9	6.94	6 4 49.4	9 50 50.70	1.281	14 8 54.4	6.95
7	9 51 15.51	1.301	14 6 40.1	7.05	7 4 46.0	9 51 21.71	1.299	14 6 6.5	7.05
8	9 51 46.95	1.319	14 3 49.8	7.15	8 4 42.6	9 51 53.17	1.317	14 3 16.1	7.15
9	9 52 18.83	1.337	14 0 57.0	7.26	9 4 39.2	9 52 25.06	1.335	14 0 23.2	7.25
10	9 52 51.14	1.355	13 58 1.7	7.36	10 4 35.8	9 52 57.38	1.353	13 57 27.9	7.35
11	9 53 23.87	1.372	13 55 4.0	7.46	11 4 32.4	9 53 30.11	1.371	13 54 30.1	7.45
12	9 53 57.02	1.389	13 52 3.9	7.56	12 4 29.0	9 54 3.26	1.388	13 51 29.9	7.55
13	9 54 30.59	1.406	13 49 1.3	7.66	13 4 25.6	9 54 36.82	1.405	13 48 27.4	7.65
14	9 55 4.56	1.423	13 45 56.4	7.76	14 4 22.2	9 55 10.79	1.422	13 45 22.5	7.75
15	9 55 38.93	1.440	13 42 49.1	7.86	15 4 18.9	9 55 45.15	1.479	13 42 15.2	7.85
16	9 56 13.70	1.457	13 39 39.4	7.95	16 4 15.6	9 56 19.91	1.455	13 39 5.5	7.95
17	9 56 48.86	1.473	13 36 27.4	8.05	17 4 12.2	9 56 55.06	1.472	13 35 53.5	8.04
18	9 57 24.40	1.489	13 33 13.1	8.14	18 4 8.8	9 57 30.58	1.488	13 32 39.2	8.14
19	9 58 0.32	1.505	13 24 56.5	8.24	19 4 5.5	9 58 6.48	1.504	13 29 22.7	8.23
20	9 58 36.62	1.520	13 26 37.6	8.33	20 4 2.2	9 58 42.76	1.519	13 26 3.9	8.33
21	9 59 13.28	1.535	13 23 16.5	8.43	21 3 58.8	9 59 19.40	1.534	13 22 42.9	8.42
22	9 59 50.30	1.550	13 19 53.2	8.52	22 3 55.5	9 59 56.39	1.549	13 19 19.7	8.51
23	10 0 27.67	1.564	13 16 27.6	8.61	23 3 52.2	10 0 33.73	1.564	13 15 54.3	8.60
24	10 1 5.39	1.578	13 12 59.9	8.70	24 3 48.9	10 1 11.42	1.578	13 12 26.7	8.69
25	10 1 43.45	1.592	13 9 30.0	8.79	25 3 45.6	10 1 49.44	1.592	13 8 56.9	8.78
26	10 2 21.84	1.606	13 5 58.0	8.88	26 3 42.3	10 2 27.79	1.605	13 5 25.0	8.87
27	10 3 0.56	1.620	13 2 23.9	8.97	27 3 39.0	10 3 6.47	1.618	13 1 51.1	8.96
28	10 3 39.61	1.633	12 58 47.8	9.05	28 3 35.7	10 3 45.48	1.631	12 58 15.2	9.05
29	10 4 18.97	1.646	12 55 9.6	9.14	29 3 32.4	10 4 24.80	1.644	12 54 37.2	9.13
30	10 4 58.63	1.659	12 51 29.3	9.22	30 3 29.1	10 5 4.42	1.657	12 50 57.1	9.22
31	10 5 38.60	+1.671	+12 47 47.1	− 9.30	31 3 25.8	10 5 44.34	+1.669	+12 47 15.1	− 9.30

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	10 5 38.60	+1.671	+12 47 47.1	− 9.30	1 3 25.8	10 5 44.34	+1.670	+12 47 15.1	− 9.30
2	10 6 18.86	1.683	12 44 2.9	9.38	2 3 22.6	10 6 24.55	1.682	12 43 31.2	9.38
3	10 6 59.41	1.695	12 40 16.8	9.46	3 3 19.3	10 7 5.05	1.694	12 39 45.3	9.46
4	10 7 40.24	1.707	12 36 28.8	9.54	4 3 16.0	10 7 45.83	1.705	12 35 57.6	9.54
5	10 8 21.34	1.718	12 32 38.9	9.62	5 3 12.8	10 8 26.87	1.716	12 32 8.0	9.61
6	10 9 2.71	1.729	12 28 47.1	9.70	6 3 9.6	10 9 8.18	1.727	12 28 16.5	9.69
7	10 9 44.34	1.740	12 24 53.5	9.78	7 3 6.3	10 9 49.75	1.738	12 24 23.2	9.76
8	10 10 26.23	1.751	12 20 58.2	9.85	8 3 3.1	10 10 31.58	1.748	12 20 28.2	9.84
9	10 11 8.38	1.761	12 17 1.1	9.92	9 2 59.9	10 11 13.67	1.758	12 16 31.4	9.91
10	10 11 50.78	1.771	12 13 2.2	9.99	10 2 56.7	10 11 56.00	1.768	12 12 32.8	9.98
11	10 12 33.41	1.781	12 9 1.6	10.06	11 2 53.4	10 12 38.56	1.778	12 8 32.5	10.05
12	10 13 16.28	1.791	12 4 59.3	10.13	12 2 50.2	10 13 21.36	1.788	12 4 30.5	10.12
13	10 13 59.38	1.801	12 0 55.3	10.20	13 2 47.0	10 14 4.39	1.798	12 0 26.9	10.19
14	10 14 42.71	1.811	11 56 49.7	10.27	14 2 43.8	10 14 47.65	1.807	11 56 21.6	10.26
15	10 15 26.27	1.820	11 52 42.4	10.34	15 2 40.6	10 15 31.14	1.816	11 52 14.7	10.32
16	10 16 10.05	1.829	11 48 33.5	10.41	16 2 37.4	10 16 14.85	1.825	11 48 6.2	10.39
17	10 16 54.05	1.838	11 44 22.9	10.48	17 2 34.2	10 16 58.77	1.834	11 43 56.0	10.45
18	10 17 38.25	1.847	11 40 10.8	10.54	18 2 31.0	10 17 42.90	1.842	11 39 44.3	10.52
19	10 18 22.66	1.855	11 35 57.1	10.61	19 2 27.8	10 18 27.23	1.851	11 35 31.0	10.58
20	10 19 7.27	1.863	11 31 41.9	10.67	20 2 24.6	10 19 11.76	1.859	11 31 16.2	10.65
21	10 19 52.07	1.871	11 27 25.3	10.73	21 2 21.4	10 19 56.48	1.867	11 26 59.9	10.71
22	10 20 37.06	1.879	11 23 7.1	10.79	22 2 18.2	10 20 41.39	1.875	11 22 42.2	10.77
23	10 21 22.24	1.886	11 18 47.4	10.85	23 2 15.0	10 21 26.49	1.883	11 18 23.0	10.83
24	10 22 7.60	1.894	11 14 26.3	10.91	24 2 11.8	10 22 11.77	1.890	11 14 2.3	10.89
25	10 22 53.13	1.901	11 10 3.8	10.97	25 2 8.6	10 22 57.21	1.897	11 9 40.2	10.95
26	10 23 38.83	1.908	11 5 39.9	11.03	26 2 5.5	10 23 42.82	1.904	11 5 16.8	11.01
27	10 24 24.69	1.915	11 1 14.6	11.09	27 2 2.3	10 24 28.59	1.911	11 0 52.0	11.06
28	10 25 10.71	1.922	10 56 48.0	11.14	28 1 59.1	10 25 14.52	1.917	10 56 25.9	11.12
29	10 25 56.87	1.928	10 52 20.2	11.19	29 1 55.9	10 26 0.59	1.923	10 51 58.6	11.17
30	10 26 43.18	1.934	10 47 51.1	11.24	30 1 52.8	10 26 46.81	1.929	10 47 30.0	11.22
31	10 27 29.63	1.940	10 43 20.8	11.29	31 1 49.6	10 27 33.17	1.935	10 43 0.2	11.27
Aug. 1	10 28 16.21	1.946	10 38 49.3	11.34	1 1 46.5	10 28 19.66	1.940	10 38 29.2	11.32
2	10 29 2.93	1.951	10 34 16.6	11.39	2 1 43.4	10 29 6.28	1.945	10 33 57.0	11.37
3	10 29 49.77	1.956	10 29 42.8	11.43	3 1 40.2	10 29 53.03	1.950	10 29 23.7	11.42
4	10 30 36.73	1.961	10 25 7.9	11.48	4 1 37.0	10 30 39.90	1.955	10 24 49.3	11.46
5	10 31 23.81	1.966	10 20 31.9	11.52	5 1 33.9	10 31 26.89	1.959	10 20 13.8	11.51
6	10 32 11.01	1.970	10 15 54.8	11.57	6 1 30.7	10 32 13.99	1.964	10 15 37.3	11.55
7	10 32 58.32	1.974	10 11 16.7	11.61	7 1 27.6	10 33 1.20	1.968	10 10 59.8	11.59
8	10 33 45.73	1.978	10 6 37.6	11.65	8 1 24.4	10 33 48.52	1.972	10 6 21.2	11.63
9	10 34 33.24	1.982	10 1 57.5	11.69	9 1 21.3	10 34 35.93	1.976	10 1 41.6	11.67
10	10 35 20.85	1.986	9 57 16.4	11.73	10 1 18.1	10 35 23.44	1.980	9 57 1.1	11.71
11	10 36 8.55	1.990	9 52 34.4	11.77	11 1 15.0	10 36 11.04	1.984	9 52 19.7	11.75
12	10 36 56.34	1.993	9 47 51.5	11.81	12 1 11.8	10 36 58.73	1.988	9 47 37.4	11.78
13	10 37 44.21	1.997	9 43 7.7	11.84	13 1 8.7	10 37 46.50	1.992	9 42 54.1	11.82
14	10 38 32.16	2.000	9 38 22.9	11.88	14 1 5.6	10 38 34.35	1.995	9 38 9.9	11.85
15	10 39 20.19	2.003	9 33 37.3	11.91	15 1 2.5	10 39 22.28	1.998	9 33 24.9	11.89
16	10 40 8.29	2.006	9 28 50.9	11.95	16 0 59.3	10 40 10.28	2.001	9 28 39.1	11.92
17	10 40 56.46	2.009	9 24 3.8	11.98	17 0 56.2	10 40 58.35	2.004	9 23 52.6	11.96
18	10 41 44.70	2.011	9 19 15.9	12.01	18 0 53.1	10 41 46.49	2.007	9 19 5.3	11.99
19	10 42 33.00	2.014	9 14 27.2	12.04	19 0 50.0	10 42 34.68	2.009	9 14 17.2	12.02
20	10 43 21.35	2.016	9 9 37.8	12.07	20 0 46.8	10 43 22.93	2.011	9 9 28.4	12.05
21	10 44 9.75	2.018	9 4 47.8	12.10	21 0 43.7	10 44 11.23	2.013	9 4 39.0	12.08
22	10 44 58.20	2.020	8 59 57.1	12.13	22 0 40.6	10 44 59.57	2.015	8 59 48.9	12.10
23	10 45 46.70	2.022	8 55 5.8	12.15	23 0 37.5	10 45 47.96	2.017	8 54 58.2	12.13
24	10 46 35.23	2.023	8 50 13.9	12.17	24 0 34.3	10 46 36.39	2.018	8 50 6.9	12.15
25	10 47 23.79	2.024	8 45 21.5	12.19	25 0 31.2	10 47 24.84	2.019	8 45 15.1	12.17
26	10 48 12.37	2.025	8 40 28.7	12.21	26 0 28.1	10 48 13.32	2.020	8 40 22.9	12.19
27	10 49 0.98	2.026	8 35 35.3	12.23	27 0 25.0	10 49 1.83	2.021	8 35 30.2	12.21
28	10 49 49.61	2.026	8 30 41.5	12.25	28 0 21.8	10 49 50.35	2.022	8 30 37.0	12.23
29	10 50 38.25	2.027	8 25 47.3	12.27	29 0 18.7	10 50 38.88	2.022	8 25 43.4	12.25
30	10 51 26.89	2.027	8 20 52.7	12.29	30 0 15.6	10 51 27.42	2.022	8 20 49.4	12.26
31	10 52 15.54	+2.027	+ 8 15 57.7	−12.30	31 0 12.5	10 52 15.96	+2.022	+ 8 15 55.1	−12.27

JUPITER, 1873.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1873.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	10 53 4.19	+2.027	+ 8 11 2.4	-12.31	1 0 9.3	10 53 4.50	+2.022	+ 8 11 0.4	-12.28
2	10 53 52.83	2.027	8 6 6.8	12.32	2 0 6.2	10 53 53.04	2.022	8 6 5.5	12.29
3	10 54 41.45	2.027	8 1 11.0	12.33	3 0 3.1	10 54 41.56	2.021	8 1 10.3	12.30
4	10 55 30.07	2.026	7 56 14.9	12.34	4 0 0.0	10 55 30.07	2.021	7 56 14.9	12.31
					4 23 56.8	10 56 18.56	2.020	7 51 19.3	12.32
5	10 56 18.67	2.025	7 51 18.6	12.35	5 23 53.6	10 57 7.04	2.019	7 46 23.5	12.32
6	10 57 7.25	2.024	7 46 22.2	12.36	6 23 50.5	10 57 55.49	2.018	7 41 27.7	12.33
7	10 57 55.81	2.023	7 41 25.7	12.37	7 23 47.4	10 58 43.92	2.017	7 36 31.7	12.34
8	10 58 44.34	2.022	7 36 29.0	12.37	8 23 44.3	10 59 32.32	2.016	7 31 35.5	12.34
9	10 59 32.84	2.020	7 31 32.2	12.37	9 23 41.1	11 0 20.68	2.014	7 26 39.3	12.34
10	11 0 21.31	2.019	7 26 35.4	12.37	10 23 38.0	11 1 9.01	2.013	7 21 43.1	12.34
11	11 1 9.75	2.017	7 21 38.6	12.37	11 23 34.9	11 1 57.30	2.011	7 16 46.9	12.34
12	11 1 58.14	2.015	7 16 41.8	12.37	12 23 31.8	11 2 45.54	2.009	7 11 50.8	12.34
13	11 2 46.49	2.013	7 11 45.0	12.37	13 23 28.6	11 3 33.73	2.007	7 6 54.7	12.34
14	11 3 34.78	2.011	7 6 48.2	12.37	14 23 25.5	11 4 21.87	2.004	7 1 58.6	12.34
15	11 4 23.02	2.009	7 1 51.5	12.36	15 23 22.4	11 5 9.95	2.002	6 57 2.7	12.33
16	11 5 11.20	2.006	6 56 55.0	12.36	16 23 19.3	11 5 57.96	1.999	6 52 7.0	12.32
17	11 5 59.32	2.003	6 51 58.6	12.35	17 23 16.1	11 6 46.91	1.996	6 47 11.5	12.31
18	11 6 47.37	2.000	6 47 2.4	12.34	18 23 13.0	11 7 33.78	1.993	6 42 16.2	12.30
19	11 7 35.34	1.997	6 42 6.6	12.33	19 23 9.9	11 8 21.58	1.990	6 37 21.2	12.29
20	11 8 23.24	1.994	6 37 10.9	12.31	20 23 6.8	11 9 9.29	1.986	6 32 26.5	12.28
21	11 9 11.05	1.990	6 32 15.5	12.30	21 23 3.6	11 9 56.91	1.982	6 27 32.1	12.26
22	11 9 58.77	1.986	6 27 20.5	12.28	22 23 0.5	11 10 44.43	1.978	6 22 38.1	12.24
23	11 10 46.40	1.982	6 22 26.0	12.26	23 22 57.3	11 11 31.86	1.974	6 17 44.6	12.22
24	11 11 33.94	1.978	6 17 31.8	12.24	24 22 54.2	11 12 19.19	1.969	6 12 41.5	12.20
25	11 12 21.37	1.974	6 12 38.1	12.22	25 22 51.0	11 13 6.42	1.965	6 7 58.9	12.18
26	11 13 8.69	1.970	6 7 44.9	12.20	26 22 47.9	11 13 53.53	1.960	6 3 6.9	12.16
27	11 13 55.89	1.963	6 2 52.3	12.18	27 22 44.7	11 14 40.52	1.955	5 58 15.5	12.13
28	11 14 42.98	1.960	5 58 0.3	12.15	28 22 41.6	11 15 27.39	1.950	5 53 24.7	12.11
29	11 15 29.95	1.955	5 53 8.9	12.13	29 22 38.4	11 16 14.14	1.945	5 48 34.6	12.08
30	11 16 16.79	1.950	5 48 18.2	12.10	30 22 35.3	11 17 0.76	1.940	5 43 45.1	12.05
Oct. 1	11 17 3.50	1.945	5 43 28.1	12.07	1 22 32.1	11 17 47.24	1.934	5 58 56.3	12.02
2	11 17 50.07	1.940	5 38 38.7	12.04	2 22 29.0	11 18 33.58	1.928	5 34 8.3	11.99
3	11 18 36.50	1.934	5 33 50.1	12.01	3 22 25.8	11 19 19.77	1.922	5 29 21.1	11.96
4	11 19 22.79	1.928	5 29 2.3	11.97	4 22 22.7	11 20 5.82	1.916	5 24 34.7	11.93
5	11 20 8.94	1.921	5 24 15.3	11.94	5 22 19.5	11 20 51.73	1.910	5 19 49.1	11.89
6	11 20 54.94	1.914	5 19 29.1	11.90	6 22 16.3	11 21 37.48	1.903	5 15 4.4	11.85
7	11 21 40.78	1.907	5 14 43.8	11.86	7 22 13.2	11 22 23.07	1.896	5 10 20.5	11.81
8	11 22 26.46	1.900	5 9 59.4	11.82	8 22 10.0	11 23 8.50	1.889	5 5 27.6	11.77
9	11 23 11.97	1.893	5 5 16.1	11.78	9 22 6.8	11 23 53.76	1.882	5 0 55.8	11.72
10	11 23 57.31	1.886	5 0 33.7	11.74	10 22 3.6	11 24 38.84	1.874	4 56 15.0	11.68
11	11 24 42.48	1.878	4 55 52.3	11.70	11 22 0.4	11 25 23.75	1.867	4 51 35.2	11.63
12	11 25 27.47	1.871	4 51 12.0	11.65	12 21 57.2	11 26 8.47	1.859	4 46 56.6	11.58
13	11 26 12.28	1.863	4 46 32.9	11.60	13 21 54.0	11 26 53.01	1.851	4 42 19.2	11.53
14	11 26 56.90	1.855	4 41 54.9	11.55	14 21 50.8	11 27 37.35	1.843	4 37 42.9	11.48
15	11 27 41.33	1.847	4 37 18.1	11.50	15 21 47.6	11 28 21.50	1.835	4 33 7.8	11.43
16	11 28 25.56	1.839	4 32 42.5	11.45	16 21 44.4	11 29 5.44	1.826	4 28 34.0	11.38
17	11 29 9.58	1.830	4 28 8.1	11.40	17 21 41.2	11 29 49.17	1.817	4 24 1.4	11.32
18	11 29 53.39	1.821	4 23 35.1	11.34	18 21 38.0	11 30 32.69	1.808	4 19 30.2	11.27
19	11 30 36.98	1.812	4 19 3.4	11.28	19 21 34.8	11 31 15.98	1.799	4 15 0.4	11.21
20	11 31 20.35	1.803	4 14 33.1	11.22	20 21 31.6	11 31 59.05	1.790	4 10 32.0	11.15
21	11 32 3.50	1.793	4 10 4.3	11.16	21 21 28.4	11 32 41.89	1.780	4 6 5.1	11.09
22	11 32 46.41	1.783	4 5 36.9	11.10	22 21 25.1	11 33 24.50	1.770	4 1 39.7	11.03
23	11 33 29.08	1.773	4 1 11.0	11.04	23 21 21.9	11 34 6.86	1.760	3 57 15.9	10.96
24	11 34 11.50	1.763	3 56 46.8	10.97	24 21 18.7	11 34 48.96	1.750	3 52 53.7	10.89
25	11 34 53.67	1.752	3 52 24.4	10.90	25 21 15.5	11 35 30.81	1.739	3 48 33.3	10.82
26	11 35 35.59	1.741	3 48 3.6	10.83	26 21 12.2	11 36 12.40	1.728	3 44 14.6	10.75
27	11 36 17.24	1.730	3 43 44.5	10.76	27 21 9.0	11 36 53.72	1.717	3 39 57.6	10.68
28	11 36 58.62	1.719	3 39 27.1	10.69	28 21 5.8	11 37 34.77	1.705	3 35 42.4	10.61
29	11 37 39.73	1.707	3 35 11.5	10.62	29 21 2.5	11 38 15.54	1.693	3 31 29.0	10.53
30	11 38 20.56	1.695	3 30 57.8	10.54	30 20 59.2	11 38 56.03	1.681	3 27 17.5	10.45
31	11 39 1.11	+1.683	+ 3 26 45.9	-10.46	31 20 56.0	11 39 36.23	+1.669	+ 3 23 7.9	-10.37

Date. 1873.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	11 39 41.36	+1.671	+ 3 22 35.9	−10.38	1 20 52.7	11 40 16.14	+1.657	+ 3 19 0.2	−10.29
2	11 40 21.32	1.658	3 18 27.9	10.30	2 20 49.4	11 40 55.75	1.645	3 14 54.4	10.20
3	11 41 0.98	1.646	3 14 21.9	10.21	3 20 46.1	11 41 35.06	1.632	3 10 50.6	10.12
4	11 41 40.34	1.633	3 10 17.9	10.13	4 20 42.8	11 42 14.06	1.619	3 6 48.9	10.03
5	11 42 19.39	1.620	3 6 15.9	10.04	5 20 39.5	11 42 52.75	1.605	3 2 49.3	9.94
6	11 42 58.12	1.607	3 2 16.0	9.95	6 20 36.2	11 43 31.12	1.592	2 58 51.8	9.85
7	11 43 36.53	1.594	2 58 18.3	9.86	7 20 32.9	11 44 9.16	1.578	2 54 56.5	9.76
8	11 44 14.62	1.580	2 54 22.8	9.77	8 20 29.6	11 44 46.87	1.564	2 51 3.4	9.66
9	11 44 52.37	1.566	2 50 29.5	9.68	9 20 26.3	11 45 24.25	1.550	2 47 12.6	9.57
10	11 45 29.78	1.552	2 46 38.5	9.58	10 20 23.0	11 46 1.28	1.536	2 43 24.1	9.47
11	11 46 6.85	1.538	2 42 49.8	9.48	11 20 19.7	11 46 37.97	1.521	2 39 38.0	9.37
12	11 46 43.57	1.523	2 39 3.5	9.38	12 20 16.4	11 47 14.30	1.506	2 35 54.2	9.27
13	11 47 19.93	1.508	2 35 19.6	9.28	13 20 13.1	11 47 50.27	1.491	2 32 12.9	9.17
14	11 47 55.92	1.493	2 31 38.2	9.18	14 20 9.8	11 48 25.87	1.476	2 28 34.1	9.06
15	11 48 31.54	1.477	2 27 59.2	9.07	15 20 6.4	11 49 1.09	1.460	2 24 57.8	8.96
16	11 49 6.78	1.461	2 24 22.8	8.96	16 20 3.1	11 49 35.93	1.444	2 21 24.0	8.85
17	11 49 41.63	1.445	2 20 49.0	8.75	17 19 59.7	11 50 10.37	1.427	2 17 52.9	8.74
18	11 50 16.08	1.428	2 17 17.9	8.74	18 19 56.3	11 50 44.41	1.410	2 14 24.5	8.62
19	11 50 50.14	1.411	2 13 49.5	8.62	19 19 52.9	11 51 18.05	1.393	2 10 58.9	8.51
20	11 51 23.79	1.394	2 10 23.9	8.51	20 19 49.5	11 51 51.28	1.376	2 7 36.1	8.39
21	11 51 57.03	1.377	2 7 1.1	8.39	21 19 46.1	11 52 24.10	1.359	2 4 16.1	8.27
22	11 52 29.85	1.359	2 3 41.1	8.27	22 19 42.7	11 52 56.49	1.341	2 0 59.0	8.15
23	11 53 2.24	1.341	2 0 24.0	8.15	23 19 39.3	11 53 28.45	1.323	1 57 44.8	8.03
24	11 53 34.20	1.323	1 57 9.9	8.03	24 19 35.9	11 53 59.98	1.305	1 54 33.6	7.90
25	11 54 5.72	1.304	1 53 58.8	7.90	25 19 32.5	11 54 31.06	1.286	1 51 25.4	7.78
26	11 54 36.79	1.286	1 50 50.7	7.77	26 19 29.1	11 55 1.68	1.267	1 48 20.3	7.65
27	11 55 7.40	1.267	1 47 45.7	7.64	27 19 25.6	11 55 31.85	1.248	1 45 18.2	7.52
28	11 55 37.56	1.247	1 44 43.8	7.51	28 19 22.2	11 56 1.56	1.229	1 42 19.2	7.39
29	11 56 7.26	1.227	1 41 45.0	7.38	29 19 18.8	11 56 30.81	1.209	1 39 23.4	7.26
30	11 56 36.48	1.207	1 38 49.4	7.25	30 19 15.3	11 56 59.68	1.189	1 36 30.8	7.12
Dec. 1	11 57 5.22	1.187	1 35 57.0	7.11	1 19 11.8	11 57 27.87	1.169	1 33 41.4	6.99
2	11 57 33.48	1.167	1 33 7.9	6.98	2 19 8.4	11 57 55.67	1.149	1 30 55.3	6.85
3	11 58 1.26	1.147	1 30 22.1	6.84	3 19 4.9	11 58 22.99	1.128	1 28 12.6	6.71
4	11 58 28.54	1.126	1 27 39.6	6.70	4 19 1.4	11 58 49.81	1.107	1 25 33.2	6.57
5	11 58 55.32	1.105	1 25 0.5	6.56	5 18 57.9	11 59 16.12	1.086	1 22 57.2	6.43
6	11 59 21.59	1.084	1 22 24.8	6.42	6 18 54.4	11 59 41.92	1.065	1 20 24.6	6.28
7	11 59 47.35	1.063	1 19 52.6	6.27	7 18 50.9	12 0 7.21	1.043	1 17 55.5	6.14
8	12 0 12.59	1.041	1 17 24.0	6.12	8 18 47.4	12 0 31.98	1.021	1 15 30.0	5.99
9	12 0 37.30	1.019	1 14 58.9	5.97	9 18 43.9	12 0 56.21	0.999	1 13 8.1	5.84
10	12 1 1.48	0.996	1 12 37.4	5.82	10 18 40.4	12 1 19.91	0.977	1 10 49.8	5.69
11	12 1 25.12	0.973	1 10 19.5	5.67	11 18 36.9	12 1 43.07	0.954	1 8 35.1	5.54
12	12 1 48.21	0.950	1 8 5.3	5.52	12 18 33.3	12 2 5.68	0.931	1 6 24.1	5.38
13	12 2 10.75	0.927	1 5 54.8	5.36	13 18 29.7	12 2 27.73	0.907	1 4 16.8	5.23
14	12 2 32.72	0.904	1 3 48.1	5.20	14 18 26.1	12 2 49.21	0.883	1 2 13.3	5.07
15	12 2 54.12	0.880	1 1 45.2	5.04	15 18 22.5	12 3 10.12	0.859	1 0 13.6	4.91
16	12 3 14.95	0.856	0 59 46.2	4.88	16 18 18.9	12 3 30.45	0.835	0 58 17.9	4.75
17	12 3 35.19	0.832	0 57 51.2	4.71	17 18 15.3	12 3 50.19	0.810	0 56 26.2	4.59
18	12 3 54.84	0.807	0 56 0.1	4.55	18 18 11.7	12 4 9.34	0.785	0 54 38.5	4.42
19	12 4 13.89	0.782	0 54 13.1	4.38	19 18 8.1	12 4 27.89	0.760	0 52 54.8	4.25
20	12 4 32.33	0.757	0 52 30.0	4.21	20 18 4.5	12 4 45.83	0.735	0 51 15.0	4.08
21	12 4 50.17	0.731	0 50 50.9	4.04	21 18 0.8	12 5 3.16	0.709	0 49 39.3	3.91
22	12 5 7.39	0.705	0 49 16.0	3.87	22 17 57.2	12 5 19.87	0.684	0 48 7.7	3.74
23	12 5 24.00	0.679	0 47 45.3	3.69	23 17 53.5	12 5 35.97	0.658	0 46 40.3	3.57
24	12 5 39.98	0.652	0 46 18.7	3.52	24 17 49.8	12 5 51.44	0.632	0 45 17.0	3.39
25	12 5 55.33	0.626	0 44 56.3	3.34	25 17 46.1	12 6 6.28	0.606	0 43 57.9	3.22
26	12 6 10.04	0.600	0 43 38.1	3.17	26 17 42.4	12 6 16.48	0.580	0 42 43.1	3.04
27	12 6 24.11	0.573	0 42 24.1	2.99	27 17 38.7	12 6 34.04	0.553	0 41 32.5	2.86
28	12 6 37.54	0.546	0 41 14.4	2.82	28 17 35.0	12 6 46.96	0.526	0 40 26.1	2.68
29	12 6 50.33	0.519	0 40 9.0	2.64	29 17 31.2	12 6 59.24	0.499	0 39 24.0	2.50
30	12 7 2.46	0.492	0 39 7.9	2.46	30 17 27.5	12 7 10.87	0.472	0 38 26.2	2.32
31	12 7 13.94	0.465	0 38 11.1	2.28	31 17 23.8	12 7 21.85	0.444	0 37 32.7	2.14
32	12 7 24.76	+0.437	+ 0 37 18.6	− 2.09	32 17 20.0	12 7 32.17	+0.417	+ 0 36 43.5	− 1.96

SATURN, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	19 36 1.10	+1.248	−21 39 4.1	+ 2.68	1 0 50.2	19 36 2.15	+1.245	−21 39 1.9	+ 2.67
2	19 36 31.08	1.250	21 37 59.6	2.70	2 0 46.8	19 36 32.06	1.247	21 37 57.6	2.69
3	19 37 1.11	1.252	21 36 54.7	2.71	3 0 43.4	19 37 2.02	1.249	21 36 52.9	2.71
4	19 37 31.18	1.254	21 35 49.4	2.73	4 0 39.9	19 37 32.02	1.251	21 35 47.7	2.73
5	19 38 1.28	1.255	21 34 43.6	2.75	5 0 36.5	19 38 2.05	1.252	21 34 42.0	2.75
6	19 38 31.41	1.256	21 33 37.4	2.77	6 0 33.1	19 38 32.10	1.253	21 33 35.9	2.76
7	19 39 1.56	1.257	21 32 30.8	2.78	7 0 29.6	19 39 2.18	1.254	21 32 29.5	2.78
8	19 39 31.73	1.258	21 31 23.8	2.80	8 0 26.2	19 39 32.28	1.255	21 31 22.7	2.79
9	19 40 1.92	1.258	21 30 16.4	2.81	9 0 22.8	19 40 2.40	1.255	21 30 15.5	2.81
10	19 40 32.12	1.259	21 29 8.7	2.83	10 0 19.3	19 40 32.53	1.256	21 29 7.9	2.83
11	19 41 2.33	1.259	21 28 0.6	2.85	11 0 15.9	19 41 2.67	1.256	21 27 59.9	2.84
12	19 41 32.55	1.259	21 26 52.1	2.86	12 0 12.5	19 41 32.82	1.256	21 26 51.5	2.86
13	19 42 2.76	1.259	21 25 43.2	2.88	13 0 9.0	19 42 2.96	1.256	21 25 42.8	2.87
14	19 42 32.96	1.258	21 24 34.0	2.89	14 0 5.6	19 42 33.09	1.255	21 24 33.8	2.88
15	19 43 3.16	1.258	21 23 24.5	2.90	15 0 2.2	19 43 3.21	1.255	21 23 24.5	2.89
					15 23 58.7	19 43 33.32	1.254	21 22 14.9	2.91
16	19 43 33.35	1.257	21 22 14.8	2.91	16 23 55.3	19 44 3.42	1.254	21 21 4.9	2.92
17	19 44 3.52	1.256	21 21 4.7	2.93	17 23 51.9	19 44 33.49	1.252	21 19 54.6	2.93
18	19 44 33.66	1.255	21 19 54.3	2.94	18 23 48.4	19 45 3.52	1.250	21 18 44.1	2.94
19	19 45 3.76	1.253	21 18 43.6	2.95	19 23 45.0	19 45 33.50	1.248	21 17 33.4	2.95
20	19 45 33.81	1.251	21 17 32.7	2.96	20 23 41.6	19 46 3.43	1.246	21 16 22.5	2.96
21	19 46 3.81	1.249	21 16 21.6	2.97	21 23 38.2	19 46 33.32	1.245	21 15 11.3	2.97
22	19 46 33.77	1.247	21 15 10.2	2.98	22 23 34.7	19 47 3.17	1.243	21 13 59.9	2.98
23	19 47 3.69	1.246	21 13 58.6	2.99	23 23 31.3	19 47 32.97	1.241	21 12 48.3	2.99
24	19 47 33.57	1.244	21 12 46.8	3.00	24 23 27.9	19 48 2.72	1.238	21 11 36.5	3.00
25	19 48 3.39	1.241	21 11 34.8	3.00	25 23 24.4	19 48 32.41	1.236	21 10 24.5	3.00
26	19 48 33.15	1.239	21 10 22.7	3.01	26 23 21.0	19 49 2.03	1.233	21 9 12.4	3.01
27	19 49 2.84	1.235	21 9 10.4	3.02	27 23 17.5	19 49 31.57	1.229	21 8 0.1	3.01
28	19 49 32.45	1.232	21 7 57.9	3.02	28 23 14.1	19 50 1.02	1.225	21 6 47.7	3.02
29	19 50 1.97	1.228	21 6 45.3	3.03	29 23 10.7	19 50 30.38	1.221	21 5 35.2	3.02
30	19 50 31.39	1.224	21 5 32.6	3.03	30 23 7.2	19 50 59.64	1.217	21 4 22.5	3.03
31	19 51 0.72	1.220	21 4 19.8	3.03	31 23 3.8	19 51 28.81	1.213	21 3 9.8	3.03
Feb. 1	19 51 29.95	1.216	21 3 7.0	3.04	1 23 0.3	19 51 57.88	1.209	21 1 57.1	3.03
2	19 51 59.09	1.212	21 1 54.1	3.04	2 22 56.9	19 52 26.86	1.205	21 0 44.3	3.03
3	19 52 28.13	1.208	21 0 41.2	3.04	3 22 53.4	19 52 55.73	1.201	20 59 31.5	3.03
4	19 52 57.07	1.203	20 59 28.2	3.04	4 22 50.0	19 53 24.49	1.196	20 58 18.7	3.03
5	19 53 25.89	1.198	20 58 15.2	3.04	5 22 46.5	19 53 53.13	1.191	20 57 5.9	3.03
6	19 53 54.59	1.193	20 57 2.2	3.04	6 22 43.0	19 54 21.64	1.185	20 55 53.1	3.03
7	19 54 23.16	1.188	20 55 49.3	3.04	7 22 39.6	19 54 50.02	1.180	20 54 40.4	3.03
8	19 54 51.60	1.182	20 54 36.4	3.04	8 22 36.1	19 55 18.26	1.174	20 53 27.8	3.02
9	19 55 19.90	1.176	20 53 23.6	3.03	9 22 32.6	19 55 46.35	1.168	20 52 15.2	3.02
10	19 55 48.05	1.170	20 52 10.8	3.03	10 22 29.2	19 56 14.30	1.162	20 51 2.7	3.02
11	19 56 16.06	1.164	20 50 58.1	3.03	11 22 25.7	19 56 42.11	1.156	20 49 50.3	3.01
12	19 56 43.93	1.158	20 49 45.6	3.02	12 22 22.2	19 57 9.78	1.150	20 48 38.1	3.00
13	19 57 11.66	1.152	20 48 33.2	3.01	13 22 18.8	19 57 37.31	1.144	20 47 26.1	3.00
14	19 57 39.24	1.146	20 47 21.0	3.00	14 22 15.3	19 58 4.68	1.137	20 46 14.2	2.99
15	19 58 6.67	1.139	20 46 9.0	3.00	15 22 11.8	19 58 31.89	1.130	20 45 2.5	2.98
16	19 58 33.93	1.132	20 44 57.1	2.99	16 22 8.3	19 58 58.93	1.123	20 43 51.0	2.97
17	19 59 1.02	1.125	20 43 45.4	2.98	17 22 4.8	19 59 25.80	1.116	20 42 39.7	2.97
18	19 59 27.94	1.118	20 42 33.9	2.97	18 22 1.3	19 59 52.49	1.108	20 41 28.6	2.96
19	19 59 54.68	1.110	20 41 22.7	2.96	19 21 57.9	20 0 18.99	1.100	20 40 17.8	2.95
20	20 0 21.23	1.103	20 40 11.7	2.95	20 21 54.4	20 0 45.31	1.093	20 39 7.2	2.94
21	20 0 47.60	1.095	20 39 1.0	2.94	21 21 50.9	20 1 11.44	1.085	20 37 56.9	2.92
22	20 1 13.78	1.087	20 37 50.6	2.93	22 21 47.4	20 1 37.38	1.077	20 36 46.9	2.91
23	20 1 39.77	1.079	20 36 40.5	2.91	23 21 43.9	20 2 3.13	1.069	20 35 37.2	2.90
24	20 2 5.56	1.070	20 35 30.7	2.90	24 21 40.4	20 2 28.68	1.060	20 34 27.9	2.88
25	20 2 31.15	1.062	20 34 21.2	2.89	25 21 36.8	20 2 54.02	1.051	20 33 18.9	2.87
26	20 2 56.53	1.053	20 33 12.1	2.87	26 21 33.3	20 3 19.15	1.042	20 32 10.3	2.85
27	20 3 21.70	1.044	20 32 3.4	2.85	27 21 29.8	20 3 44.06	1.033	20 31 2.2	2.83
28	20 3 46.65	1.035	20 30 55.2	2.83	28 21 26.3	20 4 8.74	1.024	20 29 54.5	2.81
29	20 4 11.37	1.025	20 29 47.4	2.82	29 21 22.8	20 4 33.20	1.014	20 28 47.3	2.79
30	20 4 35.86	+1.016	−20 28 40.0	+ 2.80	30 21 19.2	20 4 57.43	+1.005	−20 27 40.5	+ 2.77

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	20 4 11.37	+1.025	-20 29 47.4	+ 2.82	1 21 22.8	20 4 33.20	+1.014	-20 28 47.3	+ 2.79
2	20 4 35.86	1.016	20 28 40.0	2.80	2 21 19.2	20 4 57.43	1.005	20 27 40.5	2.77
3	20 5 0.12	1.006	20 27 33.1	2.78	3 21 15.7	20 5 21.42	0.995	20 26 34.2	2.75
4	20 5 24.14	0.996	20 26 26.7	2.76	4 21 12.2	20 5 45.17	0.985	20 25 28.4	2.73
5	20 5 47.92	0.986	20 25 20.8	2.74	5 21 8.6	20 6 8.68	0.975	20 24 23.1	2.71
6	20 6 11.46	0.976	20 24 15.4	2.71	6 21 5.1	20 6 31.95	0.964	20 23 18.3	2.69
7	20 6 34.76	0.966	20 23 10.5	2.69	7 21 1.5	20 6 54.97	0.954	20 22 14.1	2.66
8	20 6 57.81	0.955	20 22 6.2	2.67	8 20 58.0	20 7 17.74	0.943	20 21 10.5	2.64
9	20 7 20.60	0.944	20 21 2.5	2.64	9 20 54.4	20 7 40.25	0.932	20 20 7.5	2.61
10	20 7 43.13	0.933	20 19 59.5	2.61	10 20 50.8	20 8 2.49	0.921	20 19 5.2	2.58
11	20 8 5.39	0.922	20 18 57.1	2.59	11 20 47.3	20 8 24.46	0.910	20 18 3.5	2.56
12	20 8 27.39	0.911	20 17 55.3	2.56	12 20 43.7	20 8 46.17	0.899	20 17 2.5	2.53
13	20 8 49.12	0.900	20 16 54.2	2.53	13 20 40.1	20 9 7.61	0.888	20 16 2.1	2.50
14	20 9 10.58	0.889	20 15 53.8	2.50	14 20 36.6	20 9 28.79	0.877	20 15 2.3	2.48
15	20 9 31.77	0.877	20 14 54.0	2.48	15 20 33.0	20 9 49.69	0.865	20 14 3.2	2.45
16	20 9 52.68	0.865	20 13 54.9	2.45	16 20 29.4	20 10 10.30	0.853	20 13 4.9	2.41
17	20 10 13.30	0.853	20 12 56.5	2.42	17 20 25.8	20 10 30.62	0.841	20 12 7.4	2.38
18	20 10 33.63	0.841	20 11 58.9	2.38	18 20 22.2	20 10 50.65	0.829	20 11 10.6	2.35
19	20 10 53.67	0.829	20 11 2.1	2.35	19 20 18.6	20 11 10.39	0.816	20 10 14.6	2.32
20	20 11 13.42	0.817	20 10 6.0	2.32	20 20 15.0	20 11 29.84	0.804	20 9 19.3	2.29
21	20 11 32.87	0.804	20 9 10.7	2.29	21 20 11.4	20 11 48.99	0.792	20 8 24.8	2.25
22	20 11 52.02	0.791	20 8 16.2	2.25	22 20 7.7	20 12 7.84	0.779	20 7 31.2	2.21
23	20 12 10.86	0.779	20 7 22.6	2.21	23 20 4.1	20 12 26.38	0.766	20 6 38.5	2.18
24	20 12 29.39	0.765	20 6 29.9	2.18	24 20 0.5	20 12 44.60	0.752	20 5 46.7	2.14
25	20 12 47.60	0.752	20 5 38.1	2.14	25 19 56.9	20 13 2.49	0.739	20 4 55.8	2.10
26	20 13 5.48	0.738	20 4 47.2	2.10	26 19 53.2	20 13 20.06	0.725	20 4 5.7	2.07
27	20 13 23.04	0.725	20 3 57.1	2.07	27 19 49.6	20 13 37.31	0.712	20 3 16.5	2.03
28	20 13 40.28	0.711	20 3 8.0	2.03	28 19 45.9	20 13 54.24	0.699	20 2 28.3	1.99
29	20 13 57.19	0.698	20 2 19.9	1.99	29 19 42.3	20 14 10.84	0.685	20 1 41.1	1.95
30	20 14 13.77	0.684	20 1 32.8	1.94	30 19 38.6	20 14 27.10	0.670	20 0 54.9	1.90
31	20 14 30.01	0.670	20 0 46.6	1.90	31 19 34.9	20 14 43.02	0.656	20 0 9.7	1.86
Apr. 1	20 14 45.91	0.655	20 0 1.4	1.86	1 19 31.3	20 14 58.59	0.642	19 59 25.4	1.82
2	20 15 1.46	0.641	19 59 17.2	1.82	2 19 27.6	20 15 13.82	0.628	19 58 42.2	1.78
3	20 15 16.67	0.626	19 58 34.1	1.77	3 19 23.9	20 15 28.71	0.613	19 58 0.0	1.74
4	20 15 31.53	0.612	19 57 52.0	1.73	4 19 20.2	20 15 43.26	0.599	19 57 18.9	1.69
5	20 15 46.05	0.598	19 57 11.0	1.69	5 19 16.5	20 15 57.46	0.584	19 56 38.9	1.64
6	20 16 0.22	0.583	19 56 31.1	1.64	6 19 12.8	20 16 11.31	0.570	19 56 0.0	1.60
7	20 16 14.03	0.568	19 55 52.3	1.59	7 19 9.1	20 16 24.80	0.555	19 55 22.2	1.55
8	20 16 27.48	0.553	19 55 14.6	1.55	8 19 5.4	20 16 37.93	0.539	19 54 45.5	1.51
9	20 16 40.57	0.538	19 54 38.0	1.50	9 19 1.7	20 16 50.69	0.524	19 54 9.8	1.46
10	20 16 53.29	0.523	19 54 2.5	1.46	10 18 58.0	20 17 3.09	0.509	19 53 35.2	1.42
11	20 17 5.65	0.507	19 53 28.0	1.41	11 18 54.2	20 17 15.13	0.494	19 53 1.7	1.37
12	20 17 17.64	0.492	19 52 54.7	1.36	12 18 50.5	20 17 26.80	0.479	19 52 29.4	1.32
13	20 17 29.26	0.476	19 52 22.6	1.31	13 18 46.7	20 17 38.10	0.463	19 51 58.4	1.27
14	20 17 40.51	0.461	19 51 51.8	1.26	14 18 43.0	20 17 49.04	0.448	19 51 28.6	1.21
15	20 17 51.39	0.446	19 51 22.2	1.21	15 18 39.2	20 17 59.61	0.433	19 51 0.1	1.16
16	20 18 1.91	0.430	19 50 53.9	1.15	16 18 35.5	20 18 9.80	0.417	19 50 32.8	1.11
17	20 18 12.05	0.414	19 50 26.8	1.10	17 18 31.7	20 18 19.61	0.401	19 50 6.7	1.06
18	20 18 21.80	0.398	19 50 0.9	1.05	18 18 27.9	20 18 29.03	0.384	19 49 41.7	1.02
19	20 18 31 16	0.382	19 49 36.2	1.01	19 18 24.1	20 18 38.06	0.368	19 49 17.9	0.97
20	20 18 40.12	0.365	19 49 12.6	0.96	20 18 20.4	20 18 46.70	0.352	19 48 55.3	0.91
21	20 18 48.69	0.349	19 48 50.2	0.91	21 18 16.6	20 18 54.95	0.336	19 48 34.0	0.86
22	20 18 56.87	0.333	19 48 29.1	0.85	22 18 12.8	20 19 2.81	0.320	19 48 14.0	0.81
23	20 19 4.66	0.317	19 48 9.3	0.89	23 18 9.0	20 19 10.29	0.304	19 47 55.3	0.75
24	20 19 12.07	0.301	19 47 50.9	0.74	24 18 5.1	20 19 17.39	0.288	19 47 38.0	0.69
25	20 19 19.09	0.284	19 47 33.9	0.68	25 18 1.3	20 19 24.10	0.271	19 47 22.1	0.63
26	20 19 25.71	0.268	19 47 18.3	0.62	26 17 57.5	20 19 30.41	0.255	19 47 7.5	0.58
27	20 19 31.93	0.251	19 47 4.0	0.57	27 17 53.7	20 19 36.32	0.238	19 46 54.2	0.53
28	20 19 37.75	0.234	19 46 51.0	0.51	28 17 49.8	20 19 41.82	0.221	19 46 42.2	0.47
29	20 19 43.16	0.217	19 46 39.3	0.46	29 17 46.0	20 19 46.91	0.204	19 46 31.4	0.42
30	20 19 48.16	0.200	19 46 28.8	0.41	30 17 42.1	20 19 51.59	0.186	19 46 21.9	0.37
31	20 19 52.75	+0.183	-19 46 19.6	+ 0.35	31 17 38.3	20 19 55.86	+0.170	-19 46 13.7	+ 0.31

SATURN, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	20 19 52.75	+0.183	−19 46 19.6	+ 0.35	1 17 38.3	20 19 55.86	+0.170	−19 46 13.7	+ 0.31
2	20 19 56.93	0.166	19 46 11.8	0.30	2 17 34.4	20 19 59.74	0.153	19 46 6.9	0.25
3	20 20 0.71	0.149	19 46 5.4	0.24	3 17 30.5	20 20 3.23	0.137	19 46 1.5	0.20
4	20 20 4.10	0.133	19 46 0.4	0.18	4 17 26.6	20 20 6.33	0.121	19 45 57.5	0.14
5	20 20 7.10	0.117	19 45 56.7	0.12	5 17 22.8	20 20 9.03	0.104	19 45 54.8	0.08
6	20 20 9.70	0.100	19 45 54.4	0.07	6 17 18.9	20 20 11.32	0.087	19 45 53.5	+ 0.03
7	20 20 11.89	0.083	19 45 53.4	+ 0.01	7 17 15.0	20 20 13.21	0.070	19 45 53.5	− 0.03
8	20 20 13.67	0.066	19 45 53.8	− 0.04	8 17 11.1	20 20 14.69	0.053	19 45 54.9	0.09
9	20 20 15.04	0.049	19 45 55.5	0.10	9 17 7.1	20 20 15.76	0.036	19 45 57.6	0.14
10	20 20 16.00	0.031	19 45 58.6	0.16	10 17 3.2	20 20 16.43	0.020	19 46 1.6	0.20
11	20 20 16.55	+0.015	19 46 3.0	0.21	11 16 59.3	20 20 16.70	+0.003	19 46 7.0	0.25
12	20 20 16.70	−0.002	19 46 8.8	0.27	12 16 55.4	20 20 16.57	−0.014	19 46 13.7	0.31
13	20 20 16.45	0.019	19 46 15.9	0.33	13 16 51.4	20 20 16.05	0.030	19 46 21.7	0.36
14	20 20 15.81	0.035	19 46 24.4	0.38	14 16 47.5	20 20 15.13	0.046	19 46 31.1	0.42
15	20 20 14.77	0.051	19 46 34.2	0.44	15 16 43.5	20 20 13.82	0.063	19 46 41.8	0.47
16	20 20 13.34	0.068	19 46 45.4	0.49	16 16 39.5	20 20 12.11	0.080	19 46 53.9	0.53
17	20 20 11.51	0.085	19 46 57.9	0.55	17 16 35.6	20 20 10.00	0.096	19 47 7.3	0.59
18	20 20 9.27	0.102	19 47 11.7	0.60	18 16 31.6	20 20 7.49	0.113	19 47 22.0	0.64
19	20 20 6.63	0.119	19 47 26.8	0.66	19 16 27.6	20 20 4.57	0.130	19 47 38.0	0.69
20	20 20 3.58	0.135	19 47 43.3	0.71	20 16 23.6	20 20 1.26	0.146	19 47 55.3	0.75
21	20 20 0.13	0.152	19 48 1.1	0.77	21 16 19.6	20 19 57.56	0.162	19 48 14.0	0.80
22	20 19 56.29	0.168	19 48 20.2	0.82	22 16 15.6	20 19 53.47	0.179	19 48 33.9	0.86
23	20 19 52.06	0.184	19 48 40.6	0.88	23 16 11.6	20 19 48.99	0.195	19 48 55.1	0.91
24	20 19 47.44	0.201	19 49 2.3	0.93	24 16 7.6	20 19 44.12	0.211	19 49 17.6	0.96
25	20 19 42.43	0.217	19 49 25.3	0.98	25 16 3.6	20 19 38.86	0.227	19 49 41.3	1.01
26	20 19 37.02	0.233	19 49 49.5	1.04	26 15 59.6	20 19 33.21	0.243	19 50 6.3	1.07
27	20 19 31.23	0.249	19 50 15.0	1.09	27 15 55.5	20 19 27.18	0.259	19 50 32.6	1.12
28	20 19 25.06	0.265	19 50 41.8	1.14	28 15 51.5	20 19 20.78	0.274	19 51 0.1	1.17
29	20 19 18.52	0.280	19 51 9.8	1.19	29 15 47.4	20 19 14.01	0.290	19 51 28.9	1.22
30	20 19 11.60	0.296	19 51 39.1	1.25	30 15 43.4	20 19 6.87	0.305	19 51 58.9	1.27
31	20 19 4.31	0.311	19 52 9.6	1.30	31 15 39.3	20 18 59.36	0.320	19 52 30.1	1.32
June 1	20 18 56.65	0.327	19 52 41.3	1.34	1 15 35.3	20 18 51.49	0.335	19 53 2.5	1.37
2	20 18 48.63	0.342	19 53 14.1	1.39	2 15 31.2	20 18 43.26	0.351	19 53 36.0	1.42
3	20 18 40.25	0.357	19 53 48.1	1.44	3 15 27.1	20 18 34.66	0.366	19 54 10.6	1.46
4	20 18 31.50	0.372	19 54 23.2	1.49	4 15 23.1	20 18 25.71	0.380	19 54 46.3	1.51
5	20 18 22.39	0.387	19 54 59.4	1.53	5 15 19.0	20 18 16.41	0.395	19 55 23.1	1.56
6	20 18 12.94	0.401	19 55 36.7	1.58	6 15 14.9	20 18 6.77	0.409	19 56 1.0	1.60
7	20 18 3.16	0.415	19 56 15.1	1.62	7 15 10.8	20 17 56.80	0.422	19 56 40.0	1.65
8	20 17 53.04	0.429	19 56 54.6	1.67	8 15 6.7	20 17 46.50	0.436	19 57 20.0	1.69
9	20 17 42.59	9.442	19 57 35.1	1.71	9 15 2.6	20 17 35.88	0.449	19 58 1.1	1.73
10	20 17 31.81	0.456	19 58 16.7	1.75	10 14 58.5	20 17 24.93	0.463	19 58 43.2	1.77
11	20 17 20.70	0.470	19 58 59.3	1.80	11 14 54.3	20 17 13.65	0.477	19 59 26.3	1.81
12	20 17 9.27	0.483	19 59 42.9	1.84	12 14 50.2	20 17 2.05	0.490	20 0 10.3	1.85
13	20 16 57.52	0.496	20 0 27.4	1.87	13 14 46.1	20 16 50.14	0.503	20 0 55.2	1.89
14	20 16 45.46	0.509	20 1 12.8	1.91	14 14 42.0	20 16 37.92	0.515	20 1 41.1	1.93
15	20 16 33.09	0.522	20 1 59.2	1.95	15 14 37.8	20 16 25.40	0.528	20 2 27.9	1.97
16	20 16 20.42	0.534	20 2 46.5	1.99	16 14 33.7	20 16 12.59	0.540	20 3 15.5	2.00
17	20 16 7.46	0.546	20 3 34.6	2.02	17 14 29.5	20 15 59.49	0.552	20 4 4.0	2.04
18	20 15 54.21	0.558	20 4 23.6	2.06	18 14 25.4	20 15 46.10	0.564	20 4 53.3	2.07
19	20 15 40.67	0.570	20 5 13.4	2.09	19 14 21.2	20 15 32.44	0.575	20 5 43.5	2.11
20	20 15 26.86	0.581	20 6 4.0	2.12	20 14 17.1	20 15 18.51	0.586	20 6 34.5	2.14
21	20 15 12.78	0.592	20 6 55.4	2.16	21 14 12.9	20 15 4.31	0.597	20 7 26.2	2.17
22	20 14 58.43	0.603	20 7 47.5	2.19	22 14 8.7	20 14 49.84	0.608	20 8 18.6	2.20
23	20 14 43.82	0.614	20 8 40.3	2.22	23 14 4.5	20 14 35.12	0.619	20 9 11.7	2.23
24	20 14 28.95	0.625	20 9 33.9	2.25	24 14 0.4	20 14 20.15	0.629	20 10 5.5	2.26
25	20 14 13.84	0.635	20 10 28.2	2.27	25 13 56.2	20 14 4.94	0.639	20 11 0.0	2.28
26	20 13 58.49	0.644	20 11 23.1	2.30	26 13 52.0	20 13 49.50	0.648	20 11 55.1	2.31
27	20 13 42.91	0.654	20 12 18.6	2.32	27 13 47.8	20 13 33.85	0.656	20 12 50.8	2.33
28	20 13 27.12	0.662	20 13 14.7	2.35	28 13 43.6	20 13 18.00	0.665	20 13 47.1	2.36
29	20 13 11.13	0.670	20 14 11.4	2.37	29 13 39.4	20 13 1.94	0.673	20 14 43.9	2.38
30	20 12 54.94	0.679	20 15 8.6	2.39	30 13 35.2	20 12 45.68	0.681	20 15 41.2	2.40
31	20 12 38.55	−0.687	−20 16 6.3	− 2.41	31 13 31.0	20 12 29.23	−0.689	−20 16 39.0	− 2.42

SATURN, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	20 12 38.55	-0.687	-20 16 6.3	- 2.41	1 13 31.0	20 12 29.23	-0.689	-20 16 39.0	- 2.42
2	20 12 21.97	0.695	20 17 4.4	2.43	2 13 26.8	20 12 12.59	0.697	20 17 37.2	2.43
3	20 12 5.21	0.702	20 18 2.9	2.45	3 13 22.6	20 11 55.78	0.704	20 18 35.7	2.45
4	20 11 48.27	0.709	20 19 1.8	2.46	4 13 18.4	20 11 38.80	0.711	20 19 34.6	2.46
5	20 11 31.17	0.716	20 20 1.0	2.48	5 13 14.1	20 11 21.67	0.717	20 20 33.8	2.48
6	20 11 13.92	0.722	20 21 0.6	2.49	6 13 9.9	20 11 4.39	0.723	20 21 33.4	2.49
7	20 10 56.53	0.728	20 22 0.5	2.50	7 13 5.7	20 10 46.97	0.729	20 22 33.3	2.50
8	20 10 39.00	0.733	20 23 0.7	2.51	8 13 1.5	20 10 29.42	0.734	20 23 33.5	2.51
9	20 10 21.34	0.738	20 24 1.1	2.52	9 12 57.3	20 10 11.75	0.739	20 24 33.9	2.52
10	20 10 3.56	0.743	20 25 1.8	2.53	10 12 53.0	20 9 53.97	0.743	20 25 34.5	2.53
11	20 9 45.67	0.748	20 26 2.7	2.54	11 12 48.8	20 9 36.08	0.748	20 26 35.2	2.53
12	20 9 27.68	0.752	20 27 3.7	2.54	12 12 44.6	20 9 18.09	0.752	20 27 36.1	2.54
13	20 9 9.59	0.756	20 28 4.8	2.55	13 12 40.3	20 9 0.00	0.755	20 28 37.1	2.54
14	20 8 51.41	0.759	20 29 6.0	2.55	14 12 36.1	20 8 41.83	0.759	20 29 38.2	2.55
15	20 8 33.15	0.762	20 30 7.3	2.55	15 12 31.9	20 8 23.59	0.761	20 30 39.3	2.55
16	20 8 14.83	0.765	20 31 8.6	2.55	16 12 27.6	20 8 5.29	0.764	20 31 40.5	2.55
17	20 7 56.45	0.767	20 32 9.9	2.55	17 12 23.4	20 7 46.94	0.766	20 32 41.7	2.55
18	20 7 38.02	0.769	20 33 11.2	2.55	18 12 19.1	20 7 28.54	0.768	20 33 42.8	2.54
19	20 7 19.55	0.770	20 34 12.5	2.55	19 12 14.9	20 7 10.10	0.769	20 34 43.8	2.54
20	20 7 1.04	0.772	20 35 13.7	2.55	20 12 10.7	20 6 51.64	0.770	20 35 44.7	2.54
21	20 6 42.51	0.772	20 36 14.8	2.54	21 12 6.4	20 6 33.16	0.770	20 36 45.5	2.53
22	20 6 23.97	0.772	20 37 15.7	2.53	22 12 2.2	20 6 14.67	0.770	20 37 46.2	2.53
23	20 6 5.43	0.772	20 38 16.4	2.53	23 11 57.9	20 5 56.19	0.770	20 38 46.7	2.52
24	20 5 46.90	0.771	20 39 17.0	2.52	24 11 53.7	20 5 37.73	0.769	20 39 47.0	2.51
25	20 5 28.40	0.770	20 40 17.4	2.51	25 11 49.5	20 5 19.29	0.768	20 40 47.1	2.50
26	20 5 9.93	0.769	20 41 17.5	2.50	26 11 45.2	20 5 0.89	0.766	20 41 46.9	2.49
27	20 4 51.49	0.767	20 42 17.3	2.49	27 11 41.0	20 4 42.53	0.764	20 42 46.4	2.47
28	20 4 33.10	0.765	20 43 16.8	2.47	28 11 36.7	20 4 24.22	0.762	20 43 45.6	2.46
29	20 4 14.76	0.763	20 44 16.0	2.46	29 11 32.5	20 4 5.96	0.759	20 44 44.4	2.44
30	20 3 56.48	0.760	20 45 14.8	2.44	30 11 28.3	20 3 47.77	0.756	20 45 42.8	2.42
31	20 3 38.28	0.756	20 46 13.2	2.42	31 11 24.1	20 3 29.67	0.752	20 46 40.8	2.41
Aug. 1	20 3 20.17	0.752	20 47 11.1	2.40	1 11 19.8	20 3 11.66	0.748	20 47 38.3	2.39
2	20 3 2.16	0.748	20 48 8.6	2.39	2 11 15.6	20 2 53.76	0.744	20 48 35.4	2.37
3	20 2 44.26	0.743	20 49 5.6	2.36	3 11 11.4	20 2 35.97	0.739	20 49 32.0	2.35
4	20 2 26.49	0.738	20 50 2.1	2.34	4 11 7.1	20 2 18.30	0.734	20 50 28.1	2.33
5	20 2 8.84	0.733	20 50 58.1	2.32	5 11 2.9	20 2 0.76	0.728	20 51 23.7	2.30
6	20 1 51.31	0.728	20 51 53.5	2.30	6 10 58.7	20 1 43.34	0.723	20 52 18.7	2.28
7	20 1 33.91	0.722	20 52 48.3	2.27	7 10 54.5	20 1 26.05	0.717	20 53 13.1	2.25
8	20 1 16.65	0.716	20 53 42.6	2.25	8 10 50.3	20 1 8.91	0.711	20 54 6.9	2.23
9	20 0 59.55	0.709	20 54 36.3	2.23	9 10 46.1	20 0 51.94	0.704	20 55 0.2	2.21
10	20 0 42.62	0.702	20 55 29.4	2.20	10 10 41.8	20 0 35.14	0.696	20 55 52.9	2.18
11	20 0 25.87	0.694	20 56 21.8	2.17	11 10 37.6	20 0 18.51	0.689	20 56 44.9	2.15
12	20 0 9.30	0.686	20 57 13.5	2.14	12 10 33.4	20 0 2.07	0.681	20 57 36.1	2.12
13	19 59 52.92	0.679	20 58 4.5	2.11	13 10 29.2	19 59 45.82	0.673	20 58 26.6	2.09
14	19 59 36.73	0.670	20 58 54.8	2.08	14 10 25.0	19 59 29.77	0.664	20 59 16.4	2.06
15	19 59 20.75	0.661	20 59 44.4	2.05	15 10 20.8	19 59 13.93	0.655	21 0 5.5	2.03
16	19 59 4.99	0.652	21 0 33.2	2.02	16 10 16.6	19 58 58.30	0.646	21 0 53.8	2.00
17	19 58 49.45	0.643	21 1 21.2	1.99	17 10 12.5	19 58 42.90	0.637	21 1 41.4	1.97
18	19 58 34.13	0.633	21 2 8.5	1.95	18 10 8.3	19 58 27.73	0.627	21 2 28.2	1.93
19	19 58 19.05	0.623	21 2 55.0	1.92	19 10 4.1	19 58 12.80	0.617	21 3 14.2	1.90
20	19 58 4.22	0.613	21 3 40.7	1.89	20 9 59.9	19 57 58.12	0.606	21 3 59.4	1.86
21	19 57 49.65	0.602	21 4 25.5	1.85	21 9 55.7	19 57 43.70	0.595	21 4 43.7	1.83
22	19 57 35.34	0.591	21 5 9.4	1.81	22 9 51.6	19 57 29.54	0.584	21 5 27.1	1.79
23	19 57 21.30	0.579	21 5 52.4	1.77	23 9 47.4	19 57 15.65	0.573	21 6 9.6	1.75
24	19 57 7.54	0.567	21 6 34.4	1.73	24 9 43.3	19 57 2.05	0.561	21 6 51.2	1.71
25	19 56 54.07	0.555	21 7 15.5	1.69	25 9 39.1	19 56 48.74	0.549	21 7 31.9	1.68
26	19 56 40.89	0.543	21 7 55.7	1.66	26 9 35.0	19 56 35.72	0.536	21 8 11.7	1.64
27	19 56 28.01	0.530	21 8 35.1	1.62	27 9 30.8	19 56 23.00	0.524	21 8 50.6	1.60
28	19 56 15.44	0.517	21 9 13.6	1.59	28 9 26.7	19 56 10.58	0.511	21 9 28.6	1.56
29	19 56 3.18	0.504	21 9 51.2	1.55	29 9 22.5	19 55 58.48	0.498	21 10 5.6	1.52
30	19 55 51.24	0.491	21 10 27.8	1.50	30 9 18.4	19 55 46.70	0.484	21 10 41.7	1.48
31	19 55 39.62	-0.477	-21 11 3.4	- 1.46	31 9 14.3	19 55 35.24	-0.471	-21 11 16.8	- 1.44

SATURN, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	19 55 28.33	-0.464	-21 11 37.9	- 1.41	1 9 10.2	19 55 24.11	-0.457	-21 11 50.8	- 1.39
2	19 55 17.37	0.450	21 12 11.3	1.37	2 9 6.1	19 55 13.30	0.443	21 12 23.7	1.35
3	19 55 6.74	0.436	21 12 43.7	1.33	3 9 2.0	19 55 2.83	0.429	21 12 55.6	1.31
4	19 54 56.46	0.421	21 13 15.1	1.29	4 8 57.9	19 54 52.71	0.414	21 13 26.5	1.27
5	19 54 46.53	0.406	21 13 45.5	1.24	5 8 53.8	19 54 42.94	0.400	21 13 56.4	1.22
6	19 54 36.96	0.391	21 14 14.8	1.20	6 8 49.7	19 54 33.53	0.385	21 14 25.3	1.18
7	19 54 27.75	0.376	21 14 43.1	1.16	7 8 45.6	19 54 24.48	0.370	21 14 53.2	1.14
8	19 54 18.90	0.361	21 15 10.4	1.11	8 8 41.5	19 54 15.78	0.355	21 15 20.0	1.09
9	19 54 10.41	0.346	21 15 36.6	1.07	9 8 37.4	19 54 7.44	0.340	21 15 45.7	1.05
10	19 54 2.29	0.331	21 16 1.7	1.02	10 8 33.4	19 53 59.47	0.324	21 16 10.4	1.01
11	19 53 54.54	0.315	21 16 25.8	0.98	11 8 29.3	19 53 51.88	0.308	21 16 34.0	0.96
12	19 53 47.17	0.299	21 16 48.8	0.94	12 8 25.3	19 53 44.67	0.292	21 16 56.6	0.92
13	19 53 40.19	0.283	21 17 10.7	0.89	13 8 21.2	19 53 37.85	0.276	21 17 18.1	0.87
14	19 53 33.59	0.267	21 17 31.5	0.84	14 8 17.2	19 53 31.41	0.260	21 17 38.4	0.82
15	19 53 27.38	0.251	21 17 51.2	0.80	15 8 13.2	19 53 25.35	0.244	21 17 57.6	0.78
16	19 53 21.56	0.234	21 18 9.8	0.75	16 8 9.1	19 53 19.68	0.228	21 18 15.8	0.74
17	19 53 16.14	0.217	21 18 27.3	0.71	17 8 5.1	19 53 14.41	0.211	21 18 32.9	0.69
18	19 53 11.13	0.200	21 18 43.7	0.66	18 8 1.1	19 53 9.54	0.195	21 18 48.9	0.64
19	19 53 6.52	0.184	21 18 59.0	0.61	19 7 57.1	19 53 5.07	0.178	21 19 3.8	0.60
20	19 53 2.32	0.167	21 19 13.1	0.56	20 7 53.1	19 53 1.01	0.161	21 19 17.5	0.55
21	19 52 58.52	0.150	21 19 26.1	0.52	21 7 49.1	19 52 57.35	0.144	21 19 30.1	0.50
22	19 52 55.12	0.133	21 19 37.9	0.47	22 7 45.1	19 52 54.10	0.127	21 19 41.5	0.45
23	19 52 52.13	0.116	21 19 48.6	0.42	23 7 41.1	19 52 51.26	0.110	21 19 51.8	0.40
24	19 52 49.56	0.099	21 19 58.1	0.37	24 7 37.2	19 52 48.83	0.092	21 20 0.9	0.36
25	19 52 47.41	0.081	21 20 6.5	0.33	25 7 33.2	19 52 46.82	0.075	21 20 8.9	0.31
26	19 52 45.69	0.063	21 20 13.8	0.28	26 7 29.2	19 52 45.24	0.057	21 20 15.8	0.26
27	19 52 44.40	0.045	21 20 20.0	0.23	27 7 25.3	19 52 44.08	0.040	21 20 21.6	0.22
28	19 52 43.53	0.028	21 20 25.0	0.19	28 7 21.3	19 52 43.34	0.022	21 20 26.3	0.17
29	19 52 43.08	-0.010	21 20 28.9	0.14	29 7 17.4	19 52 43.02	-0.005	21 20 29.8	0.12
30	19 52 43.04	+0.007	21 20 31.6	0.09	30 7 13.5	19 52 43.11	+0.012	21 20 32.1	0.07
Oct. 1	19 52 43.42	0.024	21 20 33.1	- 0.04	1 7 9.6	19 52 43.61	0.030	21 20 33.3	- 0.02
2	19 52 44.21	0.042	21 20 33.4	+ 0.01	2 7 5.6	19 52 44.53	0.047	21 20 33.3	+ 0.03
3	19 52 45.42	0.059	21 20 32.6	0.06	3 7 1.7	19 52 45.86	0.064	21 20 32.2	0.07
4	19 52 47.05	0.077	21 20 30.6	0.11	4 6 57.8	19 52 47.61	0.082	21 20 29.9	0.12
5	19 52 49.10	0.094	21 20 27.5	0.15	5 6 53.9	19 52 49.78	0.099	21 20 26.5	0.17
6	19 52 51.58	0.112	21 20 23.3	0.20	6 6 50.0	19 52 52.38	0.117	21 20 21.9	0.21
7	19 52 54.49	0.130	21 20 17.9	0.25	7 6 46.2	19 52 55.40	0.135	21 20 16.2	0.26
8	19 52 57.83	0.148	21 20 11.4	0.30	8 6 42.3	19 52 58.84	0.152	21 20 9.4	0.31
9	19 53 1.59	0.165	21 20 3.7	0.34	9 6 38.4	19 53 2.70	0.169	21 20 1.4	0.36
10	19 53 5.76	0.182	21 19 54.9	0.39	10 6 34.6	19 53 6.97	0.186	21 19 52.3	0.40
11	19 53 10.34	0.199	21 19 45.0	0.44	11 6 30.7	19 53 11.65	0.204	21 19 42.1	0.45
12	19 53 15.33	0.217	21 19 33.9	0.49	12 6 26.9	19 53 16.74	0.221	21 19 30.8	0.50
13	19 53 20.74	0.234	21 19 21.7	0.53	13 6 23.0	19 53 22.25	0.238	21 19 18.3	0.54
14	19 53 26.57	0.252	21 19 8.4	0.58	14 6 19.2	19 53 28.17	0.255	21 19 4.7	0.59
15	19 53 32.82	0.269	21 18 53.9	0.63	15 6 15.4	19 53 34.51	0.273	21 18 49.9	0.64
16	19 53 39.49	0.286	21 18 38.2	0.67	16 6 11.5	19 53 41.27	0.290	21 18 34.0	0.69
17	19 53 46.57	0.304	21 18 21.4	0.72	17 6 7.7	19 53 48.44	0.307	21 18 17.0	0.73
18	19 53 54.06	0.321	21 18 3.4	0.77	18 6 3.9	19 53 56.01	0.324	21 17 58.8	0.78
19	19 54 1.96	0.338	21 17 44.3	0.82	19 6 0.1	19 54 3.99	0.341	21 17 39.5	0.83
20	19 54 10.27	0.355	21 17 24.1	0.87	20 5 56.3	19 54 12.38	0.358	21 17 19.0	0.88
21	19 54 18.99	0.372	21 17 2.7	0.91	21 5 52.5	19 54 21.18	0.375	21 16 57.4	0.92
22	19 54 28.12	0.389	21 16 40.2	0.96	22 5 48.7	19 54 30.39	0.392	21 16 34.7	0.97
23	19 54 37.67	0.406	21 16 16.5	1.01	23 5 45.0	19 54 40.01	0.409	21 16 10.8	1.02
24	19 54 47.62	0.423	21 15 51.7	1.06	24 5 41.2	19 54 50.03	0.426	21 15 45.8	1.06
25	19 54 57.96	0.439	21 15 25.8	1.10	25 5 37.5	19 55 0.44	0.442	21 15 19.7	1.11
26	19 55 8.69	0.455	21 14 58.7	1.15	26 5 33.7	19 55 11.23	0.458	21 14 52.4	1.16
27	19 55 19.81	0.471	21 14 30.5	1.20	27 5 30.0	19 55 22.41	0.474	21 14 24.0	1.21
28	19 55 31.31	0.487	21 14 1.1	1.25	28 5 26.2	19 55 33.97	0.490	21 13 54.4	1.26
29	19 55 43.20	0.503	21 13 30.6	1.29	29 5 22.5	19 55 45.91	0.505	21 13 23.7	1.30
30	19 55 55.47	0.519	21 12 59.0	1.34	30 5 18.8	19 55 58.23	0.521	21 12 52.0	1.34
31	19 56 8.13	0.536	21 12 26.4	1.38	31 5 15.0	19 56 10.94	0.538	21 12 19.2	1.39
32	19 56 21.18	+0.552	-21 11 52.7	+ 1.43	32 5 11.3	19 56 24.04	+0.554	-21 11 45.3	+ 1.44

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	19 56 21.18	+0.552	−21 11 52.7	+ 1.43	1 5 11.3	19 56 24.04	+0.554	−21 11 45.3	+ 1.44
2	19 56 34.61	0.567	21 11 17.9	1.47	2 5 7.6	19 56 37.52	0.569	21 11 10.3	1.48
3	19 56 48.41	0.582	21 10 42.0	1.52	3 5 3.9	19 56 51.36	0.584	21 10 34.2	1.52
4	19 57 2.57	0.597	21 10 5.0	1.56	4 5 0.2	19 57 5.56	0.599	21 9 57.1	1.57
5	19 57 17.08	0.612	21 9 26.9	1.61	5 4 56.5	19 57 20.11	0.614	21 9 18.9	1.61
6	19 57 31.95	0.627	21 8 47.7	1.66	6 4 52.9	19 57 35.01	0.628	21 8 39.6	1.66
7	19 57 47.17	0.642	21 8 7.4	1.70	7 4 49.2	19 57 50.27	0.643	21 7 59.2	1.71
8	19 58 2.75	0.656	21 7 26.0	1.75	8 4 45.5	19 58 5.88	0.658	21 7 17.7	1.75
9	19 58 18.68	0.671	21 6 43.6	1.79	9 4 41.8	19 58 21.84	0.672	21 6 35.2	1.79
10	19 58 34.96	0.686	21 6 0.1	1.83	10 4 38.2	19 58 38.15	0.687	21 5 51 6	1.84
11	19 58 51.59	0.700	21 5 15.6	1.88	11 4 34.5	19 58 54.80	0.701	21 5 7.0	1.88
12	19 59 8.56	0.714	21 4 30.0	1.92	12 4 30.9	19 59 11.79	0.715	21 4 21.3	1.93
13	19 59 25.87	0.728	21 3 43.3	1.97	13 4 27.2	19 59 29.12	0.729	21 3 34.5	1.97
14	19 59 43.51	0.742	21 2 55.6	2.01	14 4 23.6	19 59 46.78	0.742	21 2 46.7	2.01
15	20 0 1.48	0.756	21 2 6.8	2.05	15 4 20.0	20 0 4.76	0.756	21 1 57.9	2.05
16	20 0 19.78	0.769	21 1 17.0	2.10	16 4 16.3	20 0 23.07	0.770	21 1 8.1	2.10
17	20 0 38.40	0.783	21 0 26.2	2.14	17 4 12.7	20 0 41.70	0.783	21 0 17.2	2.14
18	20 0 57.34	0.796	20 59 34.3	2.18	18 4 9.1	20 1 0.65	0.796	20 59 25.3	2.19
19	20 1 16.60	0.809	20 58 41.4	2.22	19 4 5.5	20 1 19.92	0.809	20 58 32.3	2.23
20	20 1 36.17	0.822	20 57 47.5	2.26	20 4 1.9	20 1 39.49	0.822	20 57 38.3	2.27
21	20 1 56.04	0.834	20 56 52.5	2.31	21 3 58.3	20 1 59.36	0.834	20 56 43.3	2.31
22	20 2 16.21	0.847	20 55 56.5	2.35	22 3 54.7	20 2 19.53	0.847	20 55 47.3	2.35
23	20 2 36.68	0.859	20 54 59.5	2.40	23 3 51.1	20 2 40.00	0.859	20 54 50.3	2.40
24	20 2 57.44	0.871	20 54 1.5	2.44	24 3 47.5	20 3 0.76	0.871	20 53 52.3	2.44
25	20 3 18.49	0.883	20 53 2.6	2.48	25 3 43.9	20 3 21.80	0.882	20 52 53.4	2.48
26	20 3 39.82	0.895	20 52 2.7	2.52	26 3 40.3	20 3 43.12	0.894	20 51 53.5	2.52
27	20 4 1.43	0.906	20 51 1.8	2.56	27 3 36.7	20 4 4.71	0.905	20 50 52.6	2.56
28	20 4 23.31	0.917	20 49 59.9	2.60	28 3 33.2	20 4 26.57	0.916	20 49 50.7	2.60
29	20 4 45.45	0.928	20 48 57.1	2.64	29 3 29.6	20 4 48.70	0.927	20 48 47.9	2.64
30	20 5 7.86	0.939	20 47 53.3	2.68	30 3 26.0	20 5 11.09	0.938	20 47 44.1	2.68
Dec. 1	20 5 30.53	0.950	20 46 48.6	2.72	1 3 22.5	20 5 33.74	0.949	20 46 39.4	2.71
2	20 5 53.45	0.960	20 45 42.9	2.76	2 3 18.9	20 5 56.64	0.959	20 45 33.8	2.75
3	20 6 16.62	0.971	20 44 36.3	2.79	3 3 15.4	20 6 19.79	0.970	20 44 27.3	2.79
4	20 6 40.04	0.981	20 43 28.8	2.83	4 3 11.9	20 6 43.18	0.980	20 43 19.8	2.83
5	20 7 3.70	0.991	20 42 20.4	2.87	5 3 8.3	20 7 6.81	0.989	20 42 11.4	2.87
6	20 7 27.59	1.000	20 41 11.1	2.91	6 3 4.8	20 7 30.67	0.999	20 41 2.1	2.91
7	20 7 51.71	1.010	20 40 0.8	2.95	7 3 1.3	20 7 54.76	1.009	20 39 51.9	2.94
8	20 8 16.06	1.019	20 38 49.6	2.98	8 2 57.7	20 8 19.08	1.018	20 38 40.8	2.98
9	20 8 40.63	1.028	20 37 37.6	3.02	9 2 54.2	20 8 43.62	1.027	20 37 28.9	3.01
10	20 9 5.42	1.037	20 36 24.8	3.05	10 2 50.7	20 9 8.38	1.036	20 36 16.1	3.05
11	20 9 30.43	1.046	20 35 11.1	3.09	11 2 47.2	20 9 33.35	1.045	20 35 2.5	3.08
12	20 9 55.64	1.055	20 33 56.6	3.12	12 2 43.7	20 9 58.52	1.053	20 33 48.1	3.12
13	20 10 21.06	1.063	20 32 41.2	3.16	13 2 40.2	20 10 23.89	1.061	20 32 32.8	3.15
14	20 10 46.68	1.072	20 31 25.0	3.19	14 2 36.7	20 10 49.47	1.070	20 31 16.7	3.19
15	20 11 12.50	1.080	20 30 7.9	3.23	15 2 33.2	20 11 15.25	1.078	20 29 59.7	3.22
16	20 11 38.51	1.088	20 28 50.0	3.26	16 2 29.7	20 11 41.22	1.086	20 28 41.9	3.26
17	20 12 4.70	1.095	20 27 31.2	3.30	17 2 26.2	20 12 7.37	1.093	20 27 23.2	3.30
18	20 12 31.07	1.103	20 26 11.6	3.33	18 2 22.7	20 12 33.70	1.101	20 26 3.7	3.33
19	20 12 57.62	1.110	20 24 51.3	3.36	19 2 19.2	20 13 0.20	1.108	20 24 43.5	3.36
20	20 13 24.34	1.117	20 23 30.2	3.39	20 2 15.7	20 13 26.87	1.115	20 23 22.6	3.39
21	20 13 51.23	1.124	20 22 8.4	3.43	21 2 12.2	20 13 53.71	1.122	20 22 0.9	3.42
22	20 14 18.29	1.131	20 20 45.8	3.46	22 2 8.7	20 14 20.72	1.129	20 20 38.4	3.45
23	20 14 45.50	1.137	20 19 22.4	3.49	23 2 5.2	20 14 47.88	1.135	20 19 15.2	3.48
24	20 15 12.85	1.143	20 17 58.3	3.52	24 2 1.7	20 15 15.18	1.140	20 17 51.3	3.51
25	20 15 40.34	1.148	20 16 33.5	3.55	25 1 58.3	20 15 42.61	1.146	20 16 26.6	3.54
26	20 16 7.97	1.154	20 15 8.0	3.58	26 1 54.8	20 16 10.18	1.152	20 15 1.2	3.57
27	20 16 35.74	1.160	20 13 41.8	3.61	27 1 51.3	20 16 37.89	1.157	20 13 35.1	3.60
28	20 17 3.64	1.165	20 12 14.9	3.64	28 1 47.9	20 17 5.73	1.162	20 12 8.4	3.63
29	20 17 31.66	1.170	20 10 47.3	3.66	29 1 44.4	20 17 33.69	1.167	20 10 41.0	3.66
30	20 17 59.80	1.175	20 9 19.1	3.69	30 1 40.9	20 18 1.77	1.172	20 9 12.9	3.68
31	20 18 28.05	1.179	20 7 50.3	3.71	31 1 37.5	20 18 29.96	1.177	20 7 44.2	3.71
32	20 18 56.40	+1.184	−20 6 20.8	+ 3.74	32 1 34.0	20 18 58.25	+1.181	−20 6 14.9	+ 3.73

URANUS, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	8 29 12.91	-0.395	+19 41 18.7	+ 1.44	0 13 45.2	8 29 7.43	-0.396	+19 41 38.6	+ 1.45
1	8 29 3.37	0.400	19 41 53.6	1.46	1 13 41.1	8 28 57.87	0.401	19 42 13.5	1.46
2	8 28 53.72	0.405	19 42 28.5	1.47	2 13 36.9	8 28 48.20	0.405	19 42 48.4	1.47
3	8 28 43.98	0.409	19 43 3.7	1.48	3 13 32.8	8 28 38.44	0.409	19 43 23.7	1.48
4	8 28 34.13	0.413	19 43 39.4	1.49	4 13 28.7	8 28 28.57	0.413	19 43 59.4	1.49
5	8 28 24.18	0.417	19 44 15.4	1.50	5 13 24.6	8 28 18.60	0.417	19 44 35.4	1.50
6	8 28 14.14	0.421	19 44 51.6	1.51	6 13 20.4	8 28 8.54	0.421	19 45 11.7	1.51
7	8 28 4.02	0.424	19 45 27.9	1.52	7 13 16.3	8 27 58.40	0.424	19 45 48.0	1.52
8	8 27 53.82	0.427	19 46 4.5	1.53	8 13 12.2	8 27 48.19	0.427	19 46 24.6	1.53
9	8 27 43.55	0.430	19 46 41.3	1.54	9 13 8.1	8 27 37.91	0.430	19 47 1.4	1.54
10	8 27 33.20	0.433	19 47 18.3	1.54	10 13 3.9	8 27 27.55	0.433	19 47 38.4	1.54
11	8 27 22.80	0.435	19 47 55.3	1.55	11 12 59.8	8 27 17.14	0.435	19 48 15.4	1.55
12	8 27 12.34	0.438	19 48 32.5	1.55	12 12 55.7	8 27 6.68	0.437	19 48 52.5	1.56
13	8 27 1.81	0.440	19 49 9.9	1.56	13 12 51.6	8 26 56.15	0.439	19 49 29.9	1.56
14	8 26 51.22	0.442	19 49 47.4	1.56	14 12 47.5	8 26 45.57	0.441	19 50 7.3	1.56
15	8 26 40.60	0.444	19 50 24.9	1.56	15 12 43.4	8 26 34.95	0.443	19 50 44.8	1.57
16	8 26 29.93	0.446	19 51 2.5	1.57	16 12 39.3	8 26 24.29	0.444	19 51 22.3	1.57
17	8 26 19.23	0.447	19 51 40.1	1.57	17 12 35.2	8 26 13.60	0.445	19 51 59.8	1.57
18	8 26 8.48	0.448	19 52 17.8	1.57	18 12 31.1	8 26 2.86	0.446	19 52 37.4	1.57
19	8 25 57.70	0.449	19 52 55.5	1.57	19 12 27.0	8 25 52.10	0.447	19 53 15.0	1.57
20	8 25 46.91	0.450	19 53 33.2	1.57	20 12 22.9	8 25 41.33	0.448	19 53 52.6	1.56
21	8 25 36.12	0.451	19 54 10.8	1.56	21 12 18.8	8 25 30.56	0.449	19 54 30.0	1.56
22	8 25 25.29	0.451	19 54 48.4	1.56	22 12 14.7	8 25 19.75	0.449	19 55 7.5	1.56
23	8 25 14.46	0.451	19 55 26.0	1.56	23 12 10.6	8 25 8.95	0.449	19 55 45.0	1.56
24	8 25 3.62	0.451	19 56 3.5	1.56	24 12 6.5	8 24 58.14	0.449	19 56 22.3	1.56
25	8 24 52.79	0.451	19 56 40.9	1.56	25 12 2.4	8 24 47.34	0.449	19 56 59.6	1.55
26	8 24 41.96	0.451	19 57 18.2	1.55	26 11 58.3	8 24 36.55	0.449	19 57 36.7	1.55
27	8 24 31.14	0.450	19 57 55.4	1.54	27 11 54.2	8 24 25.77	0.448	19 58 13.8	1.54
28	8 24 20.34	0.449	19 58 32.4	1.53	28 11 50.1	8 24 15.01	0.447	19 58 50.6	1.53
29	8 24 9.56	0.448	19 59 9.2	1.52	29 11 46.0	8 24 4.28	0.446	19 59 27.2	1.52
30	8 23 58.81	0.447	19 59 45.9	1.52	30 11 41.9	8 23 53.58	0.445	20 0 3.7	1.51
31	8 23 48.09	0.445	20 0 22.4	1.51	31 11 37.8	8 23 42.91	0.444	20 0 40.0	1.50
Feb. 1	8 23 37.41	0.444	20 0 58.7	1.50	1 11 33.7	8 23 32.23	0.443	20 1 16.1	1.50
2	8 23 26.77	0.442	20 1 34.[illegible]	1.49	2 11 29.6	8 23 21.69	0.441	20 1 51.9	1.49
3	8 23 16.18	0.440	20 2 10.5	1.48	3 11 25.5	8 23 11.16	0.439	20 2 27.4	1.48
4	8 23 5.64	0.437	20 2 46.0	1.47	4 11 21.4	8 23 0.68	0.437	20 3 2.7	1.47
5	8 22 55.17	0.435	20 3 21.3	1.46	5 11 17.3	8 22 50.27	0.434	20 3 37.7	1.46
6	8 22 44.75	0.432	20 3 56.3	1.44	6 11 13.2	8 22 39.91	0.431	20 4 12.5	1.45
7	8 22 34.40	0.429	20 4 31.0	1.43	7 11 9.1	8 22 29.62	0.428	20 4 46.9	1.44
8	8 22 24.11	0.426	20 5 5.3	1.41	8 11 5.0	8 22 19.39	0.425	20 5 21.0	1.42
9	8 22 13.90	0.423	20 5 39.3	1.40	9 11 0.9	8 22 9.24	0.422	20 5 54.7	1.41
10	8 22 3.77	0.420	20 6 13.0	1.38	10 10 56.9	8 21 59.18	0.419	20 6 28.1	1.39
11	8 21 53.72	0.416	20 6 46.3	1.36	11 10 52.8	8 21 49.20	0.415	20 7 1.2	1.37
12	8 21 43.77	0.412	20 7 19.2	1.35	12 10 48.7	8 21 39.32	0.411	20 7 33.8	1.36
13	8 21 33.91	0.408	20 7 51.8	1.34	13 10 44.6	8 21 29.53	0.407	20 8 6.1	1.35
14	8 21 24.15	0.404	20 8 24.0	1.32	14 10 40.5	8 21 19.84	0.403	20 8 38.1	1.33
15	8 21 14.48	0.400	20 8 55.7	1.31	15 10 36.4	8 21 10.24	0.399	20 9 9.5	1.31
16	8 21 4.91	0.395	20 9 27.0	1.29	16 10 32.3	8 21 0.74	0.394	20 9 40.6	1.30
17	8 20 55.44	0.391	20 9 57.8	1.27	17 10 28.2	8 20 51.35	0.389	20 10 11.1	1.28
18	8 20 46.10	0.386	20 10 28.2	1.25	18 10 24.2	8 20 42.09	0.384	20 10 41.2	1.26
19	8 20 36.87	0.381	20 10 58.1	1.23	19 10 20.1	8 20 32.94	0.378	20 11 10.8	1.24
20	8 20 27.77	0.376	20 11 27.6	1.21	20 10 16.0	8 20 23.92	0.373	20 11 40.0	1.22
21	8 20 18.79	0.371	20 11 56.6	1.19	21 10 11.9	8 20 15.02	0.368	20 12 8.7	1.20
22	8 20 9.95	0.365	20 12 25.2	1.17	22 10 7.9	8 20 6.26	0.362	20 12 37.0	1.17
23	8 20 1.25	0.359	20 12 53.3	1.15	23 10 3.8	8 19 57.64	0.356	20 13 4.8	1.15
24	8 19 52.70	0.353	20 13 20.9	1.13	24 9 59.7	8 19 49.18	0.350	20 13 32.1	1.13
25	8 19 44.28	0.347	20 13 47.9	1.11	25 9 55.6	8 19 40.85	0.344	20 13 58.8	1.11
26	1 19 35.99	0.341	20 14 14.4	1.08	26 9 51.6	8 19 32.64	0.338	20 14 25.1	1.08
27	8 19 27.85	0.335	20 14 40.3	1.06	27 9 47.5	8 19 24.59	0.332	20 14 50.7	1.06
28	8 19 19.87	0.328	20 15 5.7	1.04	28 9 43.4	8 19 16.69	0.325	20 15 15.8	1.04
29	8 19 12.05	0.322	20 15 30.4	1.02	29 9 39.3	8 19 8.96	0.319	20 15 40.2	1.02
30	8 19 4.38	-0.315	+20 15 54.6	+ 0.99	30 9 35.3	8 19 1.38	-0.312	+20 16 4.1	+ 0.98

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	8 19 12.05	-0.322	+20 15 30.4	+ 1.02	1 9 39.3	8 19 8.96	-0.319	+20 15 40.2	+ 1.02
2	8 19 4.38	0.315	20 15 54.6	0.99	2 9 35.3	8 19 1.38	0.312	20 16 4.1	0.98
3	8 18 56.89	0.308	20 16 18.2	0.97	3 9 31.2	8 18 53.98	0.305	20 16 27.4	0.96
4	8 18 49.55	0.301	20 16 41.2	0.94	4 9 27.2	8 18 46.72	0.298	20 16 50.1	0.95
5	8 18 42.37	0.294	20 17 3.7	0.92	5 9 23.1	8 18 39.63	0.291	20 17 12.3	0.93
6	8 18 35.38	0.287	20 17 25.5	0.89	6 9 19.1	8 18 32.72	0.284	20 17 33.8	0.90
7	8 18 28.57	0.280	20 17 46.6	0.87	7 9 15.0	8 18 26.00	0.277	20 17 54.6	0.87
8	8 18 21.93	0.272	20 18 7.2	0.84	8 9 11.0	8 18 19.44	0.269	20 18 14.9	0.84
9	8 18 15.47	0.265	26 18 27.0	0.81	9 9 6.9	8 18 13.07	0.262	20 18 34.4	0.80
10	8 18 9.20	0.257	20 18 46.3	0.78	10 9 2.9	8 18 6.88	0.254	20 18 53.4	0.78
11	8 18 3.12	0.249	20 19 4.8	0.76	11 8 58.8	8 18 0.89	0.246	20 19 11.6	0.75
12	8 17 57.23	0.241	20 19 22.8	0.73	12 8 54.8	8 17 55.09	0.238	20 19 29.3	0.72
13	8 17 51.53	0.233	20 19 40.1	0.70	13 8 50.8	8 17 49.47	0.230	20 19 46.3	0.69
14	8 17 46.01	0.225	20 19 56.8	0.67	14 8 46.8	8 17 44.04	0.222	20 20 2.7	0.66
15	8 17 40.68	0.217	20 20 12.7	0.65	15 8 42.7	8 17 38.79	0.214	20 20 18.3	0.64
16	8 17 35.55	0.209	20 20 28.0	0.62	16 8 38.7	8 17 33.75	0.206	20 20 33.3	0.61
17	8 17 30.63	0.201	20 20 42.7	0.59	17 8 34.7	8 17 28.92	0.198	20 20 47.7	0.58
18	8 17 25.91	0.192	20 20 56.7	0.56	18 8 30.7	8 17 24.29	0.189	20 21 1.4	0.55
19	8 17 21.39	0.184	20 21 10.0	0.53	19 8 26.7	8 17 19.85	0.181	20 21 14.4	0.52
20	8 17 17.07	0.175	20 21 22.6	0.50	20 8 22.7	8 17 15.62	0.173	20 21 26.7	0.49
21	8 17 12.95	0.166	20 21 34.5	0.47	21 8 18.7	8 17 11.58	0.164	20 21 38.3	0.46
22	8 17 9.04	0.157	20 21 45.7	0.44	22 8 14.7	8 17 7.75	0.155	20 21 49.2	0.43
23	8 17 5.35	0.148	20 21 56.1	0.42	23 8 10.7	8 17 4.14	0.146	20 21 59.3	0.41
24	8 17 1.87	0.139	20 22 5.9	0.39	24 8 6.7	8 17 0.74	0.137	20 22 8.9	0.38
25	8 16 58.61	0.130	20 22 15.0	0.36	25 8 2.7	8 16 57.56	0.128	20 22 17.7	0.35
26	8 16 55.55	0.121	20 22 23.3	0.33	26 7 58.7	8 16 54.58	0.119	20 22 25.7	0.32
27	8 16 52.71	0.112	20 22 30.9	0.30	27 7 54.7	8 16 51.82	0.110	20 22 33.1	0.29
28	8 16 50.09	0.103	20 22 37.9	0.27	28 7 50.7	8 16 49.28	0.101	20 22 39.8	0.26
29	8 16 47.69	0.094	20 22 44.1	0.24	29 7 46.7	8 16 46.96	0.092	20 22 45.8	0.23
30	8 16 45.51	0.084	20 22 49.5	0.21	30 7 42.8	8 16 44.86	0.083	20 22 51.0	0.20
31	8 16 43.56	0.075	20 22 54.2	0.18	31 7 38.8	8 16 42.98	0.074	20 22 55.5	0.17
Apr. 1	8 16 41.83	0.066	20 22 58.2	0.15	1 7 34.9	8 16 41.32	0.065	20 22 59.3	0.14
2	8 16 40.32	0.057	20 23 1.5	0.12	2 7 30.9	8 16 39.89	0.056	20 23 2.3	0.11
3	8 16 39.03	0.047	20 23 4.1	0.09	3 7 27.0	8 16 38.67	0.046	20 23 4.7	0.08
4	8 16 37.96	0.038	20 23 6.0	0.06	4 7 23.0	8 16 37.67	0.037	20 23 6.4	0.05
5	8 16 37.12	0.028	20 23 7.1	+ 0.03	5 7 19.1	8 16 36.90	0.027	20 23 7.3	+ 0.02
6	8 16 36.50	0.019	20 23 7.5	0.00	6 7 15.1	8 16 36.35	0.018	20 23 7.5	- 0.01
7	8 16 36.10	-0.009	20 23 7.2	- 0.03	7 7 11.2	8 16 36.02	-0.008	20 23 7.0	0.04
8	8 16 35.94	0.000	20 23 6.1	0.06	8 7 7.3	8 16 35.93	+0.001	20 23 5.7	0.07
9	8 16 36.00	+0.009	20 23 4.3	0.09	9 7 3.4	8 16 36.06	0.010	20 23 3.7	0.10
10	8 16 36.28	0.018	20 23 1.7	0.12	10 6 59.5	8 16 36.41	0.019	20 23 0.9	0.13
11	8 16 36.77	0.028	20 22 58.3	0.15	11 6 55.6	8 16 36.97	0.029	20 22 57.3	0.16
12	8 16 37.51	0.038	20 22 54.2	0.18	12 6 51.7	8 16 37.77	0.039	20 22 53.0	0.19
13	8 16 38.47	0.047	20 22 49.5	0.21	13 6 47.8	8 16 38.79	0.048	20 22 48.1	0.22
14	8 16 39.65	0.056	20 22 44.1	0.24	14 6 43.9	8 16 40.03	0.057	20 22 42.5	0.25
15	8 16 41.04	0.065	20 22 37.9	0.27	15 6 40.0	8 16 41.48	0.066	20 22 36.1	0.28
16	8 16 42.66	0.074	20 22 31.0	0.30	16 6 36.1	8 16 43.16	0.075	20 22 29.1	0.31
17	8 16 44.50	0.083	20 22 23.3	0.33	17 6 32.2	8 16 45.06	0.084	20 22 21.2	0.34
18	8 16 46.56	0.092	20 22 14.9	0.36	18 6 28.3	8 16 47.18	0.093	20 22 12.6	0.37
19	8 16 48.84	0.101	20 22 5.7	0.39	19 6 24.4	8 16 49.51	0.102	20 22 3.2	0.40
20	8 16 51.35	0.111	20 21 55.9	0.42	20 6 20.5	8 16 52.07	0.112	20 21 53.2	0.43
21	8 16 54.08	0.120	20 21 45.4	0.45	21 6 16.6	8 16 54.85	0.121	20 21 42.6	0.46
22	8 16 57.04	0.129	20 21 34.3	0.48	22 6 12.7	8 16 57.86	0.130	20 21 31.3	0.49
23	8 17 0.21	0.138	20 21 22.4	0.51	23 6 8.8	8 17 1.08	0.139	20 21 19.2	0.52
24	8 17 3.61	0.147	20 21 9.8	0.54	24 6 4.9	8 17 4.53	0.148	20 21 6.5	0.55
25	8 17 7.22	0.156	20 20 56.5	0.57	25 6 1.0	8 17 8.18	0.157	20 20 53.0	0.58
26	8 17 11.05	0.165	20 20 42.4	0.61	26 5 57.1	8 17 12.05	0.166	20 20 38.8	0.61
27	8 17 15.09	0.174	20 20 27.6	0.63	27 5 53.3	8 17 16.13	0.175	20 20 23.8	0.63
28	8 17 19.36	0.183	20 20 22.2	0.66	28 5 49.4	8 17 20.44	0.184	20 20 8.3	0.66
29	8 17 23.85	0.192	20 19 56.1	0.69	29 5 45.6	8 17 24.97	0.193	20 19 52.0	0.69
30	8 17 28.55	0.201	20 19 39.2	0.72	30 5 41.7	8 17 29.71	0.202	20 19 35.0	0.72
31	8 17 33.46	+0.210	+20 19 21.6	- 0.75	31 5 37.9	8 17 34.65	+0.211	+20 19 17.3	- 0.75

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1873.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	8 17 33.46	+0.210	+20 19 21.6	– 0.75	1 5 37.9	8 17 34.65	+0.211	+20 19 17.3	– 0.75
2	8 17 38.58	0.219	20 19 3.4	0.77	2 5 34.0	8 17 39.81	0.220	20 18 59.0	0.78
3	8 17 43.92	0.227	20 18 44.4	0.80	3 5 30.2	8 17 45.18	0.228	20 18 39.9	0.81
4	8 17 49.47	0.236	20 18 24.8	0.83	4 5 26.3	8 17 50.76	0.237	20 18 20.2	0.84
5	8 17 55.21	0.244	20 18 4.5	0.86	5 5 22.5	8 17 56.53	0.245	20 17 59.8	0.87
6	8 18 1.15	0.253	20 17 43.5	0.88	6 5 18.6	8 18 2.50	0.254	20 17 38.7	0.89
7	8 18 7.31	0.261	20 17 21.9	0.91	7 5 14.8	8 18 8.69	0.262	20 17 17.0	0.92
8	8 18 13.67	0.269	20 16 59.7	0.94	8 5 11.0	8 18 15.08	0.270	20 16 54.8	0.95
9	8 18 20.22	0.277	20 16 36.8	0.97	9 5 7.2	8 18 21.65	0.278	20 16 31.8	0.98
10	8 18 26.97	0.285	20 16 13.2	0.99	10 5 3.4	8 18 28.42	0.286	20 16 8.2	1.00
11	8 18 33.90	0.293	20 15 48.9	1.02	11 4 59.6	8 18 35.37	0.294	20 15 43.8	1.03
12	8 18 41.04	0.301	20 15 24.0	1.04	12 4 55.8	8 18 42.53	0.302	20 15 18.9	1.05
13	8 18 48.38	0.309	20 14 58.5	1.07	13 4 52.0	8 18 49.89	0.310	20 14 53.3	1.08
14	8 18 55.91	0.317	20 14 32.4	1 09	14 4 48.2	8 18 57.44	0.318	20 14 27.1	1.10
15	8 19 3.64	0.325	20 14 5.6	1.12	15 4 44.4	8 19 5.19	0.326	20 14 0.3	1.13
16	8 19 11.56	0.333	20 13 38.2	1.15	16 4 40.6	8 19 13.12	0.334	20 13 32.8	1.16
17	8 19 19.65	0.341	20 13 10.2	1.18	17 4 36.8	8 19 21.23	0.342	20 13 4.8	1.19
18	8 19 27.93	0.349	20 12 41.5	1.20	18 4 33.0	8 19 29.52	0.350	20 12 36.9	1.21
19	8 19 36.39	0.356	20 12 12.2	1.23	19 4 29.2	8 19 37.99	0.357	20 12 6.7	1.24
20	8 19 45.04	0.364	20 11 42.4	1.25	20 4 25.4	8 19 46.65	0.365	20 11 36.9	1.26
21	8 19 53.85	0.371	20 11 12.0	1.28	21 4 21.6	8 19 55.47	0.372	20 11 6.4	1.29
22	8 20 2.85	0.379	20 10 40.9	1.30	22 4 17.8	8 20 4.48	0.379	20 10 35.3	1.31
23	8 20 12.03	0.386	20 10 9.2	1.33	23 4 14.0	8 20 13.67	0.386	20 10 3.6	1.34
24	8 20 21.39	0.393	20 9 36.9	1.35	24 4 10.2	8 20 23.04	0.393	20 9 31.3	1.36
25	8 20 30.91	0.400	20 9 4.1	1.38	25 4 6.5	8 20 32.56	0.400	20 8 58.5	1.39
26	8 20 40.61	0.407	20 8 30.7	1.40	26 4 2.7	8 20 42.26	0.407	20 8 25.0	1.41
27	8 20 50.47	0.414	20 7 56.7	1.43	27 3 58.9	8 20 52.12	0.414	20 7 51.0	1.44
28	8 21 0.49	0.421	20 7 22.1	1.45	28 3 55.1	8 21 2.14	0.421	20 7 16.4	1.46
29	8 21 10.67	0.428	20 6 47.0	1.48	29 3 51.4	8 21 12.32	0.428	20 6 41.3	1.49
30	8 21 21.02	0.435	20 6 11.3	1.50	30 3 47.6	8 21 22.67	0.435	20 6 5.6	1.51
31	8 21 31.53	0.441	20 5 35.0	1.53	31 3 43.9	8 21 33.18	0.441	20 5 29.3	1.53
June 1	8 21 42.20	0.448	20 4 58.4	1.55	1 3 40.1	8 21 43.84	0.447	20 4 52.7	1.55
2	8 21 53.02	0.454	20 4 21.1	1.57	2 3 36.4	8 21 54.66	0.453	20 4 15.5	1.57
3	8 22 3.98	0.460	20 3 43.3	1.60	3 3 32.6	8 22 5.62	0.459	20 3 37.7	1.60
4	8 22 15.08	0.466	20 3 4.9	1.62	4 3 28.9	8 22 16.71	0.465	20 2 59.3	1.62
5	8 22 26.33	0.472	20 2 26.1	1.64	5 3 25.1	8 22 27.95	0.471	20 2 20.5	1.64
6	8 22 37.73	0.478	20 1 46.7	1.66	6 3 21.4	8 22 39.34	0.477	20 1 41.2	1.66
7	8 22 49.27	0.484	20 1 6.8	1.68	7 3 17.6	8 22 50.87	0.483	20 1 1.3	1.68
8	8 23 0.94	0.490	20 0 26.5	1.70	8 3 13.8	8 23 2.53	0.489	20 0 21.0	1.70
9	8 23 12.75	0.496	19 59 45.7	1.72	9 3 10.1	8 23 14.31	0.494	19 59 40.3	1.72
10	8 23 24.69	0.501	19 59 4.4	1.74	10 3 6.4	8 23 26.25	0.499	19 58 59.0	1.74
11	8 23 36.76	0.506	19 58 22.6	1.76	11 3 2.6	8 23 38.31	0.504	19 58 17.2	1.75
12	8 23 48.96	0.511	19 57 40.4	1.78	12 2 58.9	8 23 50.49	0.509	19 57 35.1	1.77
13	8 24 1.28	0.516	19 56 57.7	1.80	13 2 55.2	8 24 2.79	0.514	19 56 52.4	1.79
14	8 24 13.73	0.521	19 56 14.6	1.82	14 2 51.5	8 24 15.22	0.519	19 56 9.4	1.81
15	8 24 26.29	0.526	19 55 31.0	1.84	15 2 47.8	8 24 27.76	0.524	19 55 25.9	1.83
16	8 24 38.98	0.531	19 54 47.0	1.86	16 2 44.1	8 24 40.43	0.529	19 54 42.0	1.85
17	8 24 51.78	0.536	19 54 2.6	1.88	17 2 40.4	8 24 53.21	0.534	19 53 57.6	1.87
18	8 25 4.70	0.541	19 53 17.7	1.89	18 2 36.7	8 25 6.11	0.539	19 53 12.8	1.88
19	8 25 17.73	0.546	19 52 32.4	1.91	19 2 32.9	8 25 19.12	0.544	19 52 27.5	1.90
20	8 25 30.86	0.550	19 51 46.7	1.92	20 2 29.2	8 25 32.22	0.548	19 51 41.9	1.91
21	8 25 44.11	0.555	19 51 0.6	1.94	21 2 25.5	8 25 45.45	0.553	19 50 55.9	1.92
22	8 25 57.46	0.559	19 50 14.1	1.95	22 2 21.8	8 25 58.77	0.557	19 50 9.5	1.94
23	8 26 10.91	0.563	19 49 27.2	1.97	23 2 18.1	8 26 12.20	0.561	19 49 22.7	1.96
24	8 26 24.45	0.567	19 48 39.9	1.98	24 2 14.4	8 26 25.72	0.565	19 48 35.5	1.97
25	8 26 38.09	0.571	19 47 52.3	2.00	25 2 10.7	8 26 39.33	0.569	19 47 48.0	1.99
26	8 26 51.83	0.575	19 47 4.3	2.01	26 2 7.0	8 26 53.05	0.573	19 47 0.1	2.00
27	8 27 5.67	0.579	19 46 15.9	2.03	27 2 3.3	8 27 6.86	0.577	19 46 11.8	2.02
28	8 27 19.59	0.582	19 45 27.0	2.04	28 1 59.6	8 27 20.75	0.580	19 45 23.0	2.03
29	8 27 33.58	0.585	19 44 37.8	2.05	29 1 55.9	8 27 34.71	0.583	19 44 33.9	2.04
30	8 27 47.64	0.588	19 43 48.5	2.06	30 1 52.2	8 27 48.74	0.586	19 43 44.7	2.05
31	8 28 1.78	+0.591	+19 42 58.9	– 2.07	31 1 48.5	8 28 2.85	+0.589	+19 42 55.2	– 2.06

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	8 28 1.78	+0.591	+19 42 58.9	− 2.07	1 1 48.5	8 28 2.85	+0.589	+19 42 55.2	− 2.06
2	8 28 16.00	0.594	19 42 8.9	2.09	2 1 44.8	8 28 17.04	0.592	19 42 5.3	2.08
3	8 28 30.30	0.597	19 41 18.6	2.10	3 1 41.1	8 28 31.31	0.595	19 41 15.1	2.10
4	8 28 44.67	0.600	19 40 28.0	2.11	4 1 37.4	8 28 45.65	0.598	19 40 24.6	2.11
5	8 28 59.10	0.603	19 39 37.1	2.12	5 1 33.7	8 29 0.04	0.601	19 39 33.8	2.12
6	8 29 13.59	0.606	19 38 45.9	2.13	6 1 30.0	8 29 14.50	0.604	19 38 42.7	2.13
7	8 29 28.15	0.609	19 37 54.5	2.14	7 1 26.3	8 29 29.03	0.607	19 37 51.4	2.14
8	8 29 42.76	0.611	19 37 2.8	2.15	8 1 22.6	8 29 43.61	0.609	19 36 59.8	2.15
9	8 29 57.43	0.613	19 36 10.9	2.16	9 1 18.9	8 29 58.24	0.611	19 36 8.0	2.16
10	8 30 12.15	0.615	19 35 18.8	2.17	10 1 15.2	8 30 12.92	0.613	19 35 16.1	2.17
11	8 30 26.92	0.617	19 34 26.5	2.18	11 1 11.5	8 30 27.66	0.615	19 34 23.9	2.18
12	8 30 41.74	0.619	19 33 34.0	2.19	12 1 7.8	8 30 42.45	0.617	19 33 31.5	2.19
13	8 30 56.62	0.621	19 32 41.2	2.20	13 1 4.1	8 30 57.29	0.619	19 32 38.8	2.20
14	8 31 11.53	0.622	19 31 48.1	2.21	14 1 0.4	8 31 12.16	0.620	19 31 45.9	2.21
15	8 31 26.48	0.623	19 30 54.8	2.22	15 0 56.7	8 31 27.07	0.621	19 30 52.7	2.22
16	8 31 41.46	0.624	19 30 1.4	2.22	16 0 53.1	8 31 42.02	0.622	19 29 59.4	2.23
17	8 31 56.49	0.626	19 29 7.8	2.23	17 0 49.4	8 31 57.01	0.624	19 29 6.0	2.23
18	8 32 11.55	0.627	19 28 14.0	2.24	18 0 45.7	8 32 12.03	0.625	19 28 12.3	2.24
19	8 32 26.64	0.628	19 27 20.1	2.25	19 0 42.0	8 32 27.08	0.626	19 27 18.6	2.25
20	8 32 41.76	0.629	19 26 26.0	2.25	20 0 38.4	8 32 42.16	0.627	19 26 24.6	2.25
21	8 32 56.90	0.630	19 25 31.8	2.25	21 0 34.7	8 32 57.26	0.628	19 25 30.6	2.25
22	8 33 12.05	0.631	19 24 37.3	2.26	22 0 31.0	8 33 12.37	0.629	19 24 36.2	2.26
23	8 33 27.22	0.632	19 23 42.8	2.26	23 0 27.3	8 33 27.50	0.630	19 23 41.9	2.26
24	8 33 42.39	0.633	19 22 48.2	2.27	24 0 23.7	8 33 42.63	0.631	19 22 47.4	2.27
25	8 33 57.59	0.633	19 21 53.5	2.27	25 0 20.0	8 33 57.80	0.632	19 21 52.8	2.27
26	8 34 12.80	0.634	19 20 58.7	2.28	26 0 16.3	8 34 12.98	0.633	19 20 58.2	2.28
27	8 34 28.01	0.634	19 20 3.9	2.28	27 0 12.6	8 34 28.15	0.633	19 20 3.5	2.28
28	8 34 43.22	0.634	19 19 9.1	2.29	28 0 9.0	8 34 43.32	0.632	19 19 8.8	2.29
29	8 34 58.44	0.634	19 18 14.1	2.29	29 0 5.4	8 34 58.50	0.632	19 18 14.0	2.29
30	8 35 13.65	0.634	19 17 19.0	2.29	30 0 1.7	8 35 13.67	0.632	19 17 19.0	2.29
					30 23 58.0	8 35 28.84	0.632	19 16 24.2	2.29
31	8 35 28.86	0.634	19 16 24.0	2.29	31 23 54.3	8 35 43.99	0.631	19 15 29.2	2.29
Aug. 1	8 35 44.05	0.633	19 15 28.9	2.29	1 23 50.7	8 35 59.13	0.631	19 14 34.3	2.29
2	8 35 59.23	0.633	19 14 33.9	2.29	2 23 47.0	8 36 14.25	0.630	19 13 39.4	2.29
3	8 36 14.39	0.632	19 13 38.8	2.29	3 23 43.3	8 36 29.37	0.629	19 12 44.5	2.29
4	8 36 29.54	0.631	19 12 43.8	2.29	4 23 39.6	8 36 44.46	0.628	19 11 49.6	2.28
5	8 36 44.67	0.630	19 11 48.8	2.28	5 23 35.9	8 36 59.52	0.627	19 10 54.8	2.28
6	8 36 59.77	0.629	19 10 53.8	2.28	6 23 32.2	8 37 14.56	0.626	19 9 59.9	2.28
7	8 37 14.85	0.628	19 9 58.8	2.28	7 23 28.5	8 37 29.57	0.625	19 9 5.0	2.28
8	8 37 29.90	0.627	19 9 3.8	2.28	8 23 24.8	8 37 44.56	0.624	19 8 10.2	2.28
9	8 37 44.92	0.625	19 8 8.9	2.28	9 23 21.1	8 37 59.50	0.622	19 7 15.5	2.27
10	8 37 59.90	0.624	19 7 14.0	2.28	10 23 17.4	8 38 14.41	0.620	19 6 20.9	2.27
11	8 38 14.85	0.622	19 6 19.3	2.28	11 23 13.7	8 38 29.28	0.619	19 5 26.4	2.27
12	8 38 29.76	0.621	19 5 24.7	2.28	12 23 10.0	8 38 44.13	0.617	19 4 31.9	2.27
13	8 38 44.64	0.619	19 4 30.1	2.27	13 23 6.4	8 38 58.93	0.615	19 3 37.6	2.26
14	8 38 59.47	0.617	19 3 35.6	2.27	14 23 2.7	8 39 13.68	0.613	19 2 43.4	2.26
15	8 39 14.26	0.615	19 2 41.3	2.26	15 22 59.0	8 39 28.38	0.611	19 1 49.4	2.25
16	8 39 29.00	0.613	19 1 47.1	2.26	16 22 55.3	8 39 43.01	0.609	19 0 55.5	2.25
17	8 39 43.67	0.610	19 0 53.1	2.25	17 22 51.6	8 39 57.58	0.607	19 0 1.8	2.24
18	8 39 58.28	0.608	18 59 59.2	2.25	18 22 47.9	8 40 12.11	0.604	18 59 8.3	2.23
19	8 40 12.84	0.605	18 59 5.6	2.24	19 22 44.2	8 40 26.58	0.602	18 58 14.9	2.22
20	8 40 27.35	0.603	18 58 12.1	2.23	20 22 40.5	8 40 40.99	0.599	18 57 21.7	2.21
21	8 40 41.79	0.600	18 57 18.7	2.22	21 22 36.9	8 40 55.33	0.596	18 56 28.7	2.20
22	8 40 56.16	0.597	18 56 25.6	2.21	22 22 33.2	8 41 9.59	0.593	18 55 35.9	2.20
23	8 41 10.45	0.594	18 55 32.7	2.21	23 22 29.5	8 41 23.79	0.590	18 54 43.3	2.19
24	8 41 24.68	0.591	18 54 40.0	2.20	24 22 25.8	8 41 37.91	0.586	18 53 51.0	2.18
25	8 41 38.83	0.587	18 53 47.6	2.19	25 22 22.1	8 41 51.95	0.583	18 52 59.1	2.17
26	8 41 52.90	0.584	18 52 55.5	2.18	26 22 18.4	8 42 5.92	0.579	18 52 7.4	2.16
27	8 42 6.89	0.580	18 52 3.7	2.17	27 22 14.7	8 42 19.79	0.576	18 51 15.9	2.15
28	8 42 20.79	0.577	18 51 12.1	2.16	28 22 11.0	8 42 33.58	0.572	18 50 24.6	2.14
29	8 42 34.61	0.573	18 50 20.7	2.15	29 22 7.3	8 42 47.28	0.569	18 49 33.6	2.12
30	8 42 48.34	0.570	18 49 29.6	2.13	30 22 3.6	8 43 0.88	0.565	18 48 43.0	2.10
31	8 43 1.97	+0.566	+18 48 38.9	− 2.11	31 21 59.9	8 43 14.38	+0.561	+18 47 52.8	− 2.08

URANUS, 1873.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1873.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	8 43 15.50	+0.562	+18 47 48.6	− 2.10	1 21 56.2	8 43 27.79	+0.556	+18 47 2.9	− 2.07
2	8 43 28.94	0.557	18 46 58.6	2.08	2 21 52.5	8 43 41.10	0.552	18 46 13.3	2.06
3	8 43 42.27	0.553	18 46 8.9	2.07	3 21 48.8	8 43 54.30	0.547	18 45 24.0	2.04
4	8 43 55.50	0.548	18 45 19.5	2.05	4 21 45.0	8 44 7.40	0.543	18 44 35.1	2.03
5	8 44 8.62	0.544	18 44 30.5	2.04	5 21 41.3	8 44 20.39	0.539	18 43 46.6	2.01
6	8 44 21.64	0.539	18 43 41.9	2.02	6 21 37.6	8 44 33.29	0.534	18 42 58.5	2.00
7	8 44 34.56	0.534	18 42 53.7	2.01	7 21 33.9	8 44 46.06	0.529	18 42 10.7	1.99
8	8 44 47.35	0.529	18 42 5.9	1.99	8 21 30.1	8 44 58.73	0.524	18 41 23.5	1.97
9	8 45 0.04	0.524	18 41 18.6	1.97	9 21 26.4	8 45 11.28	0.519	18 40 36.6	1.95
10	8 45 12.61	0.519	18 40 31.6	1.95	10 21 22.7	8 45 23.70	0.514	18 39 50.2	1.93
11	8 45 25.05	0.514	18 39 45.1	1.93	11 21 19.0	8 45 36.00	0.509	18 39 4.2	1.91
12	8 45 37.37	0.509	18 38 59.0	1.91	12 21 15.3	8 45 48.18	0.504	18 38 18.6	1.89
13	8 45 49.56	0.504	18 38 13.4	1.89	13 21 11.6	8 46 0.20	0.499	18 37 33.6	1.87
14	8 46 1.62	0.498	18 37 28.3	1.87	14 21 7.8	8 46 12.14	0.494	18 36 49.0	1.85
15	8 46 13.55	0.493	18 36 43.6	1.85	15 21 4.1	8 46 23.92	0.488	18 36 4.8	1.83
16	8 46 25.35	0.487	18 35 59.4	1.83	16 21 0.3	8 46 35.58	0.482	18 35 21.2	1.81
17	8 46 37.02	0.481	18 35 15.7	1.81	17 20 56.6	8 46 47.10	0.476	18 34 38.1	1.79
18	8 46 48.55	0.475	18 34 32.6	1.79	18 20 52.8	8 46 58.47	0.470	18 33 55.5	1.77
19	8 46 59.93	0.469	18 33 50.0	1.77	19 20 49.0	8 47 9.70	0.464	18 33 13.4	1.75
20	8 47 11.17	0.463	18 33 7.9	1.75	20 20 45.3	8 47 20.79	0.458	18 32 31.9	1.73
21	8 47 22.27	0.457	18 32 26.3	1.73	21 20 41.5	8 47 31.72	0.452	18 31 50.9	1.70
22	8 47 33.21	0.450	18 31 45.3	1.70	22 20 37.8	8 47 42.51	0.446	18 31 10.5	1.68
23	8 47 44.00	0.444	18 31 4.9	1.68	23 20 34.1	8 47 53.13	0.439	18 30 30.7	1.65
24	8 47 54.63	0.437	18 30 25.1	1.65	24 20 30.3	8 48 3.61	0.433	18 29 51.5	1.62
25	8 48 5.11	0.431	18 29 45.8	1.62	25 20 26.6	8 48 13.93	0.426	18 29 12.9	1.60
26	8 48 15.43	0.424	18 29 7.2	1.60	26 20 22.8	8 48 24.08	0.420	18 28 34.9	1.58
27	8 48 25.59	0.418	18 28 29.2	1.58	27 20 19.1	8 48 34.07	0.413	18 27 57.6	1.55
28	8 48 35.58	0.411	18 27 51.9	1.55	28 20 15.3	8 48 43.90	0.406	18 27 20.9	1.52
29	8 48 45.41	0.404	18 27 15.2	1.52	29 20 11.5	8 48 53.56	0.399	18 26 44.8	1.49
30	8 48 55.07	0.397	18 26 39.1	1.49	30 20 7.7	8 49 3.05	0.392	18 26 9.4	1.46
Oct. 1	8 49 4.55	0.390	18 26 3.8	1.46	1 20 4.0	8 49 12.37	0.385	18 25 34.7	1.43
2	8 49 13.87	0.383	18 25 29.1	1.43	2 20 0.2	8 49 21.52	0.378	18 25 0.7	1.40
3	8 49 23.02	0.376	18 24 55.1	1.40	3 19 56.4	8 49 30.49	0.370	18 24 27.3	1.37
4	8 49 31.98	0.368	18 24 21.7	1.37	4 19 52.6	8 49 39.28	0.363	18 23 54.5	1.34
5	8 49 40.77	0.361	18 23 49.0	1.34	5 19 48.8	8 49 47.89	0.355	18 23 22.6	1.31
6	8 49 49.37	0.353	18 23 17.1	1.31	6 19 45.0	8 49 56.33	0.348	18 22 51.3	1.28
7	8 49 57.80	0.346	18 22 45.8	1.28	7 19 41.2	8 50 4.58	0.340	18 22 20.7	1.25
8	8 50 6.06	0.338	18 22 15.3	1.25	8 19 37.4	8 50 12.64	0.333	18 21 50.9	1.22
9	8 50 14.09	0.331	18 21 45.5	1.22	9 19 33.6	8 50 20.52	0.325	18 21 21.7	1.19
10	8 50 21.96	0.323	18 21 16.4	1.19	10 19 29.8	8 50 28.22	0.317	18 20 53.3	1.16
11	8 50 29.65	0.315	18 20 48.1	1.16	11 19 26.0	8 50 35.74	0.309	18 20 25.8	1.13
12	8 50 37.15	0.307	18 20 20.6	1.12	12 19 22.2	8 50 43.06	0.301	18 19 58.9	1.10
13	8 50 44.45	0.299	18 19 53.8	1.09	13 19 18.4	8 50 50.18	0.293	18 19 32.8	1.07
14	8 50 51.55	0.291	18 19 27.8	1.06	14 19 14.6	8 50 57.10	0.284	18 19 7.5	1.04
15	8 50 58.45	0.283	18 19 2.6	1.03	15 19 10.8	8 51 3.83	0.276	18 18 43.0	1.00
16	8 51 5.06	0.274	18 18 38.2	0.99	16 19 6.9	8 51 10.35	0.268	18 18 19.4	0.97
17	8 51 11.66	0.266	18 18 14.7	0.96	17 19 3.1	8 51 16.68	0.259	18 17 56.5	0.93
18	8 51 17.96	0.257	18 17 51.9	0.92	18 18 59.2	8 51 22.80	0.251	18 17 34.4	0.90
19	8 51 24.05	0.249	18 17 29.9	0.89	19 18 55.4	8 51 28.73	0.243	18 17 13.1	0.86
20	8 51 29.95	0.240	18 17 8.7	0.85	20 18 51.5	8 51 34.44	0.235	18 16 52.6	0.83
21	8 54 35.63	0.232	18 16 48.3	0.82	21 18 47.7	8 51 39.94	0.226	18 16 33.0	0.79
22	8 51 41.10	0.223	18 16 28.8	0.78	22 18 43.8	8 51 45.24	0.217	18 16 14.1	0.75
23	8 51 46.37	0.214	18 16 10.1	0.74	23 18 40.0	8 51 50.32	0.208	18 15 56.2	0.71
24	8 51 51.42	0.205	18 15 52.3	0.70	24 18 36.1	8 51 55.19	0.199	18 15 39.1	0.68
25	8 51 56.25	0.196	18 15 35.4	0.67	25 18 32.3	8 51 59.84	0.190	18 15 22.9	0.65
26	8 52 0.86	0.187	18 15 19.3	0.63	26 18 28.4	8 52 4.29	0.181	18 15 7.5	0.62
27	8 52 5.27	0.178	18 15 4.1	0.60	27 18 24.6	8 52 8.52	0.172	18 14 52.9	0.58
28	8 52 9.46	0.169	18 14 49.7	0.56	28 18 20.7	8 52 12.54	0.163	18 14 39.4	0.55
29	8 52 13.44	0.160	18 14 36.3	0.53	29 18 16.9	8 52 16.35	0.154	18 14 26.6	0.51
30	8 52 17.20	0.151	18 14 23.7	0.49	30 18 13.0	8 52 19.93	0.145	18 14 14.7	0.48
31	8 52 20.74	0.142	18 14 12.0	0.46	31 18 9.1	8 52 23.28	0.136	18 14 3.7	0.44
32	8 52 24.06	+0.133	+18 14 1.2	− 0.42	32 18 5.2	8 52 26.43	+0.127	+18 13 53.6	− 0.40

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	8 52 24.06	+0.133	+18 14 1.2	− 0.42	1 18 5.2	8 52 26.43	+0.127	+18 13 53.6	− 0.40
2	8 52 27.16	0.125	18 13 51.3	0.39	2 18 1.3	8 52 29.35	0.118	18 13 44.3	0.36
3	8 52 30.04	0.116	18 13 42.2	0.35	3 17 57.4	8 52 32.06	0.109	18 13 35.9	0.33
4	8 52 32.70	0.107	18 13 34.0	0.32	4 17 53.5	8 52 34.54	0.099	18 13 28.5	0.29
5	8 52 35.13	0.097	18 13 26.8	0.28	5 17 49.6	8 52 36.80	0.090	18 13 22.0	0.26
6	8 52 37.34	0.088	18 13 20.5	0.25	6 17 45.7	8 52 38.83	0.080	18 13 16.4	0.22
7	8 52 39.32	0.078	18 13 15.1	0.21	7 17 41.8	8 52 40.64	0.071	18 13 11.7	0.19
8	8 52 41.08	0.069	18 13 10.6	0.17	8 17 37.9	8 52 42.23	0.061	18 13 7.7	0.15
9	8 52 42.62	0.059	18 13 6.9	0.13	9 17 34.0	8 52 43.61	0.052	18 13 4.7	0.12
10	8 52 43.94	0.050	18 13 4.1	0.10	10 17 30.1	8 52 44.77	0.043	18 13 2.6	0.08
11	8 52 45.04	0.040	18 13 2.2	0.06	11 17 26.2	8 52 45.70	0.034	18 13 1.3	− 0.04
12	8 52 45.91	0.031	18 13 1.2	− 0.02	12 17 22.3	8 52 46.40	0.024	18 13 1.0	0.00
13	8 52 46.55	0.021	18 13 1.2	+ 0.02	13 17 18.3	8 52 46.88	0.015	18 13 1.6	+ 0.03
14	8 52 46.97	0.012	18 13 2.1	0.05	14 17 14.4	8 52 47.13	+0.005	18 13 3.1	0.07
15	8 52 47.16	+0.002	18 13 3.9	0.09	15 17 10.5	8 52 47.15	−0.004	18 13 5.5	0.11
16	8 52 47.12	−0.007	18 13 6.5	0.13	16 17 6.5	8 52 46.95	0.013	18 13 8.9	0.15
17	8 52 46.85	0.016	18 13 10.1	0.17	17 17 2.6	8 52 46.53	0.023	18 13 13.1	0.19
18	8 52 46.36	0.026	18 13 14.6	0.20	18 16 58.7	8 52 45.88	0.033	18 13 18.3	0.22
19	8 52 45.64	0.036	18 13 20.1	0.24	19 16 54.7	8 52 45.01	0.043	18 13 24.3	0.26
20	8 52 44.70	0.046	18 13 26.4	0.28	20 16 50.8	8 52 43.92	0.052	18 13 31.3	0.30
21	8 52 43.54	0.055	18 13 33.6	0.32	21 16 46.8	8 52 42.60	0.060	18 13 39.2	0.33
22	8 52 42.16	0.063	18 13 41.8	0.35	22 16 42.9	8 52 41.06	0.069	18 13 47.9	0.37
23	8 52 40.55	0.072	18 13 50.8	0.39	23 16 38.9	8 52 39.29	0.078	18 13 57.5	0.41
24	8 52 38.71	0.081	18 14 0.7	0.43	24 16 35.0	8 52 37.30	0.087	18 14 8.0	0.45
25	8 52 36.65	0.090	18 14 11.5	0.47	25 16 31.0	8 52 35.10	0.097	18 14 19.4	0.48
26	8 52 34.38	0.100	18 14 23.2	0.50	26 16 27.1	8 52 32.69	0.106	18 14 31.6	0.52
27	8 52 31.89	0.109	18 14 35.7	0.54	27 16 23.1	8 52 30.06	0.115	18 14 44.6	0.56
28	8 52 29.18	0.118	18 14 49.0	0.58	28 16 19.0	8 52 27.21	0.124	18 14 58.4	0.60
29	8 52 26.26	0.127	18 15 3.1	0.62	29 16 15.1	8 52 24.16	0.133	18 15 13.1	0.63
30	8 52 23.13	0.136	18 15 18.1	0.65	30 16 11.2	8 52 20.89	0.142	18 15 28.7	0.66
Dec. 1	8 52 19.78	0.145	18 15 34.0	0.69	1 16 7.2	8 52 17.40	0.150	18 15 45.2	0.70
2	8 52 16.21	0.154	18 15 50.8	0.72	2 16 3.2	8 52 13.70	0.158	18 16 2.4	0.73
3	8 52 12.43	0.162	18 16 8.3	0.76	3 15 59.2	8 52 9.80	0.167	18 16 20.4	0.77
4	8 52 8.45	0.171	18 16 26.6	0.80	4 15 55.2	8 52 5.68	0.175	18 16 39.3	0.81
5	8 52 4.26	0.179	18 16 45.8	0.83	5 15 51.2	8 52 1.37	0.184	18 16 59.0	0.84
6	8 51 59.87	0.188	18 17 5.8	0.86	6 15 47.2	8 51 56.87	0.192	18 17 19.5	0.87
7	8 51 55.28	0.196	18 17 26.7	0.89	7 15 43.2	8 51 52.16	0.201	18 17 40.8	0.90
8	8 51 50.49	0.205	18 17 48.3	0.93	8 15 39.2	8 51 47.24	0.209	18 18 2.8	0.94
9	8 51 45.49	0.213	18 18 10.6	0.96	9 15 35.2	8 51 42.12	0.217	18 18 25.5	0.97
10	8 51 40.29	0.221	18 18 33.7	0.99	10 15 31.2	8 51 36.80	0.225	18 18 49.0	1.00
11	8 51 34.89	0.229	18 18 57.5	1.02	11 15 27.1	8 51 31.30	0.233	18 19 13.1	1.03
12	8 51 29.30	0.237	18 19 22.0	1.05	12 15 23.1	8 51 25.61	0.241	18 19 38.1	1.06
13	8 51 23.53	0.245	18 19 47.3	1.08	13 15 19.1	8 51 19.75	0.249	18 20 3.8	1.09
14	8 51 17.58	0.253	18 20 13.4	1.11	14 15 15.1	8 51 13.68	0.256	18 20 30.2	1.12
15	8 51 11.43	0.260	18 20 40.1	1.13	15 15 11.0	8 51 7.43	0.264	18 20 57.4	1.14
16	8 51 5.09	0.268	18 21 7.6	1.16	16 15 7.0	8 51 0.99	0.271	18 21 25.1	1.17
17	8 50 58.57	0.275	18 21 35.7	1.19	17 15 2.9	8 50 54.38	0.279	18 21 53.6	1.20
18	8 50 51.87	0.283	18 22 4.5	1.22	18 14 58.9	8 50 47.58	0.286	18 22 22.7	1.23
19	8 50 44.99	0.290	18 22 33.9	1.24	19 14 54.8	8 50 40.62	0.293	18 22 52.3	1.25
20	8 50 37.94	0.297	18 23 3.9	1.27	20 14 50.8	8 50 33.49	0.300	18 23 22.7	1.28
21	8 50 30.73	0.304	18 23 34.6	1.29	21 14 46.7	8 50 26.19	0.307	18 23 53.7	1.30
22	8 50 23.35	0.311	18 24 5.9	1.32	22 14 42.7	8 50 18.73	0.314	18 24 25.3	1.33
23	8 50 15.81	0.318	18 24 37.8	1.34	23 14 38.6	8 50 11.11	0.320	18 24 57.5	1.35
24	8 50 8.10	0.324	18 25 10.3	1.37	24 14 34.6	8 50 3.33	0.326	18 25 30.2	1.38
25	8 50 0.24	0.330	18 25 43.4	1.39	25 14 30.5	8 49 55.40	0.332	18 26 3.6	1.40
26	8 49 52.23	0.336	18 26 17.1	1.42	26 14 26.4	8 49 47.33	0.338	18 26 37.5	1.42
27	8 49 44.07	0.342	18 26 51.3	1.44	27 14 22.3	8 49 39.12	0.344	18 27 11.9	1.44
28	8 49 35.77	0.348	18 27 26.0	1.46	28 14 18.3	8 49 30.75	0.350	18 27 46.8	1.46
29	8 49 27.32	0.354	18 28 1.1	1.48	29 14 14.2	8 49 22.25	0.356	18 28 22.0	1.48
30	8 49 18.73	0.360	18 28 36.7	1.50	30 14 10.1	8 49 13.62	0.361	18 28 58.0	1.50
31	8 49 10.02	0.365	18 29 12.8	1.52	31 14 6.1	8 49 4.86	0.367	18 29 24.4	1.52
32	8 49 1.19	−0.370	+18 29 49.4	+ 1.54	32 14 2.0	8 48 55.98	−0.372	+18 30 11.1	+ 1.54

NEPTUNE, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	1 29 38.12	−0.013	+ 7 31 39.5	+ 0.08	1 6 42.9	1 29 38.04	−0.012	+ 7 31 40.1	+ 0.09
2	1 29 37.87	0.008	7 31 41.7	0.11	2 6 38.9	1 29 37.82	0.006	7 31 42.5	0.12
3	1 29 37.76	−0.002	7 31 44.7	0.14	3 6 35.0	1 29 37.74	−0.000	7 31 45.6	0.15
4	1 29 37.78	+0.003	7 31 48.5	0.17	4 6 31.1	1 29 37.80	+0.005	7 31 49.6	0.19
5	1 29 37.92	0.009	7 31 53.1	0.21	5 6 27.2	1 29 37.98	0.010	7 31 54.5	0.22
6	1 29 38.20	0.014	7 31 58.5	0.24	6 6 23.2	1 29 38.29	0.016	7 32 0.1	0.25
7	1 29 38.61	0.020	7 32 4.6	0.27	7 6 19.3	1 29 38.73	0.021	7 32 6.4	0.28
8	1 29 39.15	0.025	7 32 11.5	0.30	8 6 15.4	1 29 39.31	0.027	7 32 13.5	0.31
9	1 29 39.82	0.031	7 32 19.1	0.33	9 6 11.5	1 29 40.02	0.032	7 32 21.3	0.34
10	1 29 40.63	0.036	7 32 27.5	0.37	10 6 7.5	1 29 40.86	0.038	7 32 29.8	0.37
11	1 29 41.57	0.042	7 32 36.7	0.40	11 6 3.6	1 29 41.83	0.043	7 32 39.2	0.41
12	1 29 42.63	0.047	7 32 46.6	0.43	12 5 59.7	1 29 42.92	0.048	7 32 49.3	0.44
13	1 29 43.82	0.052	7 32 57.3	0.46	13 5 55.8	1 29 44.14	0.054	7 33 0.2	0.47
14	1 29 45.14	0.058	7 33 8.8	0.50	14 5 51.9	1 29 45.49	0.059	7 33 11.8	0.50
15	1 29 46.60	0.063	7 33 21.1	0.53	15 5 48.0	1 29 46.97	0.064	7 33 24.2	0.53
16	1 29 48.18	0.069	7 33 34.1	0.56	16 5 44.1	1 29 48.58	0.070	7 33 37.4	0.56
17	1 29 49.89	0.074	7 33 47.9	0.59	17 5 40.2	1 29 50.32	0.075	7 33 51.3	0.59
18	1 29 51.73	0.079	7 34 2.4	0.62	18 5 36.3	1 29 52.18	0.080	7 34 5.9	0.62
19	1 29 53.70	0.085	7 34 17.7	0.65	19 5 32.4	1 29 54.17	0.086	7 34 21.3	0.66
20	1 29 55.80	0.090	7 34 33.7	0.68	20 5 28.5	1 29 56.30	0.091	7 34 37.4	0.69
21	1 29 58.03	0.096	7 34 50.4	0.71	21 5 24.6	1 29 58.55	0.097	7 34 54.3	0.72
22	1 30 0.39	0.101	7 35 7.9	0.74	22 5 20.7	1 30 0.93	0.102	7 35 11.9	0.75
23	1 30 2.87	0.106	7 35 26.1	0.77	23 5 16.8	1 30 3.43	0.107	7 35 30.2	0.78
24	1 30 5.48	0.111	7 35 45.1	0.81	24 5 12.9	1 30 6.06	0.112	7 35 49.3	0.81
25	1 30 8.21	0.116	7 36 4.8	0.84	25 5 9.0	1 30 8.81	0.117	7 36 9.1	0.84
26	1 30 11.07	0.122	7 36 25.2	0.87	26 5 5.1	1 30 11.69	0.123	7 36 29.6	0.87
27	1 30 14.06	0.127	7 36 46.3	0.89	27 5 1.2	1 30 14.69	0.128	7 36 50.8	0.90
28	1 30 17.17	0.132	7 37 8.1	0.92	28 4 57.4	1 30 17.82	0.133	7 37 12.7	0.93
29	1 30 20.40	0.137	7 37 30.6	0.95	29 4 53.5	1 30 21.07	0.138	7 37 35.3	0.96
30	1 30 23.76	0.142	7 37 53.9	0.98	30 4 49.6	1 30 24.44	0.143	7 37 58.6	0.99
31	1 30 27.24	0.148	7 38 17.9	1.01	31 4 45.7	1 30 27.94	0.148	7 38 22.7	1.02
Feb. 1	1 30 30.85	0.153	7 38 42.5	1.04	1 4 41.9	1 30 31.56	0.153	7 38 47.4	1.05
2	1 30 34.57	0.158	7 39 7.8	1.07	2 4 38.0	1 30 35.30	0.158	7 39 12.7	1.07
3	1 30 38.41	0.163	7 39 33.7	1.09	3 4 34.1	1 30 39.16	0.163	7 39 38.7	1.10
4	1 30 42.38	0.168	7 40 0.3	1.12	4 4 30.3	1 30 43.14	0.168	7 40 5.4	1.13
5	1 30 46.46	0.173	7 40 27.6	1.15	5 4 26.4	1 30 47.23	0.173	7 40 32.7	1.15
6	1 30 50.66	0.177	7 40 55.5	1.18	6 4 22.5	1 30 51.44	0.178	7 41 0.7	1.18
7	1 30 54.97	0.182	7 41 24.1	1.20	7 4 18.7	1 30 55.75	0.182	7 41 29.3	1.20
8	1 30 59.38	0.186	7 41 53.3	1.23	8 4 14.8	1 31 0.17	0.186	7 41 58.5	1.23
9	1 31 3.90	0.191	7 42 23.1	1.25	9 4 11.0	1 31 4.70	0.191	7 42 28.4	1.26
10	1 31 8.54	0.196	7 42 53.5	1.28	10 4 7.1	1 31 9.34	0.196	7 42 58.8	1.28
11	1 31 13.29	0.200	7 43 24.5	1.30	11 4 3.2	1 31 14.10	0.201	7 43 29.8	1.31
12	1 31 18.15	0.205	7 43 56.1	1.33	12 3 59.4	1 31 18.97	0.205	7 44 1.4	1.33
13	1 31 23.12	0.209	7 44 28.4	1.36	13 3 55.5	1 31 23.94	0.209	7 44 33.7	1.36
14	1 31 28.19	0.213	7 45 1.2	1.38	14 3 51.7	1 31 29.02	0.214	7 45 6.6	1.38
15	1 31 33.37	0.218	7 45 34.6	1.40	15 3 47.8	1 31 34.20	0.218	7 45 40.0	1.40
16	1 31 38.65	0.222	7 46 8.5	1.42	16 3 44.0	1 31 39.48	0.222	7 46 13.9	1.42
17	1 31 44.03	0.226	7 46 42.9	1.44	17 3 40.2	1 31 44.87	0.226	7 46 48.3	1.44
18	1 31 49.52	0.231	7 47 17.9	1.47	18 3 36.3	1 31 50.36	0.231	7 47 23.2	1.47
19	1 31 55.11	0.235	7 47 53.5	1.49	19 3 32.5	1 31 55.95	0.235	7 47 58.7	1.49
20	1 32 0.80	0.239	7 48 29.6	1.51	20 3 28.7	1 32 1.63	0.239	7 48 34.8	1.51
21	1 32 6.58	0.243	7 49 6.2	1.54	21 3 24.8	1 32 7.41	0.243	7 49 11.4	1.54
22	1 32 12.46	0.247	7 49 43.3	1.56	22 3 21.0	1 32 13.29	0.247	7 49 48.5	1.56
23	1 32 18.44	0.251	7 50 20.9	1.58	23 3 17.2	1 32 19.27	0.251	7 50 26.1	1.58
24	1 32 24.51	0.255	7 50 59.1	1.60	24 3 13.3	1 32 25.34	0.255	7 51 4.2	1.60
25	1 32 30.67	0.259	7 51 37.8	1.62	25 3 9.5	1 32 31.49	0.258	7 51 42.8	1.62
26	1 32 36.92	0.262	7 52 16.9	1.64	26 3 5.7	1 32 37.73	0.262	7 52 21.9	1.64
27	1 32 43.26	0.266	7 52 56.4	1.66	27 3 1.9	1 32 44.06	0.266	7 53 1.4	1.66
28	1 32 49.69	0.269	7 53 36.4	1.68	28 2 58.0	1 32 50.48	0.269	7 53 41.4	1.68
29	1 32 56.20	0.273	7 54 16.9	1.70	29 2 54.2	1 32 56.99	0.273	7 54 21.8	1.70
30	1 33 2.80	0.277	7 54 57.8	1.71	30 2 50.4	1 33 3.59	0.277	7 55 2.7	1.71
31	1 33 9.48	+0.280	+ 7 55 39.1	+ 1.73	31 2 46.6	1 33 10.26	+0.280	+ 7 55 43.9	+ 1.72

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	1 32 56.20	+0.273	+ 7 54 16.9	+ 1.70	1 2 54.2	1 32 56.99	+0.273	+ 7 54 21.8	+ 1.69
2	1 33 2.80	0.277	7 54 57.8	1.71	2 2 50.4	1 33 3.59	0.277	7 55 2.7	1.71
3	1 33 9.48	0.280	7 55 39.1	1.73	3 2 46.6	1 33 10.26	0.280	7 55 43.9	1.72
4	1 33 16.24	0.283	7 56 20.8	1.75	4 2 42.7	1 33 17.01	0.283	7 56 25.5	1.74
5	1 33 23.08	0.286	7 57 3.0	1.76	5 2 38.9	1 33 23.84	0.286	7 57 7.6	1.76
6	1 33 29.99	0.290	7 57 45.5	1.78	6 2 35.1	1 33 30.74	0.289	7 57 50.1	1.78
7	1 33 36.98	0.293	7 58 28.4	1.80	7 2 31.3	1 33 37.72	0.292	7 58 32.9	1.79
8	1 33 44.04	0.296	7 59 11.7	1.81	8 2 27.5	1 33 44.77	0.295	7 59 16.1	1.81
9	1 33 51.17	0.299	7 59 55.3	1.82	9 2 23.6	1 33 51.88	0.298	7 59 59.6	1.82
10	1 33 58.37	0.302	8 0 39.2	1.84	10 2 19.8	1 33 59.07	0.301	8 0 43.5	1.84
11	1 34 5.65	0.305	8 1 23.5	1.85	11 2 16.0	1 34 6.33	0.304	8 1 27.7	1.85
12	1 34 12.99	0.307	8 2 8.1	1.86	12 2 12.2	1 34 13.66	0.307	8 2 12.2	1.86
13	1 34 20.40	0.310	8 2 53.0	1.88	13 2 8.4	1 34 21.06	0.310	8 2 57.0	1.87
14	1 34 27.87	0.313	8 3 38.2	1.89	14 2 4.6	1 34 28.52	0.312	8 3 42.1	1.89
15	1 34 35.40	0.315	8 4 23.8	1.90	15 2 0.8	1 34 36.03	0.314	8 4 27.6	1.90
16	1 34 42.98	0.317	8 5 9.6	1.91	16 1 57.0	1 34 43.60	0.317	8 5 13.3	1.91
17	1 34 50.62	0.320	8 5 55.7	1.93	17 1 53.2	1 34 51.23	0.319	8 5 59.3	1.92
18	1 34 58.32	0.322	8 6 42.0	1.94	18 1 49.4	1 34 58.91	0.321	8 6 45.5	1.93
19	1 35 6.08	0.324	8 7 28.6	1.95	19 1 45.6	1 35 6.65	0.324	8 7 32.0	1.94
20	1 35 13.89	0.327	8 8 15.4	1.96	20 1 41.8	1 35 14.45	0.326	8 8 18.7	1.95
21	1 35 21.76	0.329	8 9 2.5	1.97	21 1 38.0	1 35 22.30	0.328	8 9 5.7	1.96
22	1 35 29.67	0.331	8 9 49.8	1.98	22 1 34.2	1 35 30.19	0.330	8 9 52.9	1.97
23	1 35 37.63	0.333	8 10 37.3	1.98	23 1 30.4	1 35 38.13	0.332	8 10 40.3	1.98
24	1 35 45.63	0.334	8 11 24.9	1.99	24 1 26.6	1 35 46.11	0.334	8 11 27.8	1.98
25	1 35 53.68	0.336	8 12 12.7	2.00	25 1 22.8	1 35 54.14	0.336	8 12 15.5	1.99
26	1 36 1.78	0.338	8 13 0.8	2.01	26 1 19.0	1 36 2.22	0.338	8 13 3.4	2.00
27	1 36 9.91	0.340	8 13 49.0	2.01	27 1 15.2	1 36 10.34	0.339	8 13 51.5	2.01
28	1 36 18.08	0.341	8 14 37.3	2.02	28 1 11.4	1 36 18.49	0.340	8 14 39.7	2.01
29	1 36 26.29	0.343	8 15 25.8	2.02	29 1 7.6	1 36 26.67	0.342	8 15 28.1	2.02
30	1 36 34.53	0.344	8 16 14.4	2.03	30 1 3.8	1 36 34.89	0.343	8 16 16.6	2.02
31	1 36 42.81	0.346	8 17 3.2	2.04	31 1 0.0	1 36 43.15	0.345	8 17 5.2	2.03
Apr. 1	1 36 51.12	0.347	8 17 52.1	2.04	1 0 56.2	1 36 51.44	0.346	8 17 54.0	2.03
2	1 36 59.45	0.348	8 18 41.0	2.04	2 0 52.4	1 36 59.76	0.347	8 18 42.8	2.03
3	1 37 7.81	0.349	8 19 30.0	2.04	3 0 48.6	1 37 8.10	0.348	8 19 31.6	2.04
4	1 37 16.20	0.350	8 20 19.0	2.05	4 0 44.8	1 37 16.46	0.349	8 20 20.5	2.04
5	1 37 24.61	0.351	8 21 8.1	2.05	5 0 41.0	1 37 24.84	0.350	8 21 9.5	2.04
6	1 37 33.03	0.351	8 21 57.2	2.05	6 0 37.3	1 37 33.25	0.351	8 21 58.5	2.04
7	1 37 41.48	0.352	8 22 46.4	2.05	7 0 33.5	1 37 41.68	0.351	8 22 47.5	2.04
8	1 37 49.95	0.353	8 23 35.6	2.05	8 0 29.7	1 37 50.12	0.352	8 23 36.6	2.05
9	1 37 58.43	0.354	8 24 24.9	2.06	9 0 25.9	1 37 58.58	0.353	8 24 25.8	2.05
10	1 38 6.92	0.354	8 25 14.3	2.06	10 0 22.1	1 38 7.05	0.353	8 25 15.0	2.05
11	1 38 15.43	0.355	8 26 3.6	2.05	11 0 18.3	1 38 15.54	0.354	8 26 4.2	2.05
12	1 38 23.95	0.355	8 26 52.8	2.05	12 0 14.5	1 38 24.04	0.354	8 26 53.3	2.04
13	1 38 32.48	0.355	8 27 41.9	2.04	13 0 10.7	1 38 32.54	0.354	8 27 42.3	2.04
14	1 38 41.01	0.356	8 28 30.9	2.04	14 0 6.9	1 38 41.05	0.355	8 28 31.2	2.04
15	1 38 49.55	0.356	8 29 19.9	2.04	15 0 3.1	1 38 49.57	0.355	8 29 20.1	2.04
					15 23 59.3	1 38 58.09	0.355	8 30 9.0	2.04
16	1 38 58.09	0.356	8 30 9.0	2.04	16 23 55.5	1 39 6.61	0.355	8 30 57.8	2.03
17	1 39 6.63	0.356	8 30 58.0	2.04	17 23 51.8	1 39 15.13	0.355	8 31 46.6	2.03
18	1 39 15.17	0.356	8 31 46.9	2.04	18 23 48.0	1 39 23.64	0.354	8 32 35.3	2.03
19	1 39 23.71	0.356	8 32 35.7	2.03	19 23 44.2	1 39 32.15	0.354	8 33 23.8	2.02
20	1 39 32.25	0.356	8 33 24.3	2.03	20 23 40.4	1 39 40.66	0.354	8 34 12.1	2.01
21	1 39 40.78	0.355	8 34 12.8	2.02	21 23 36.6	1 39 49.16	0.354	8 35 0.4	2.01
22	1 39 49.30	0.355	8 35 1.2	2.01	22 23 32.8	1 39 57.65	0.353	8 35 48.6	2.01
23	1 39 57.81	0.354	8 35 49.5	2.01	23 23 29.0	1 40 6.13	0.353	8 36 36.7	2.00
24	1 40 6.31	0.354	8 36 37.7	2.00	24 23 25.2	1 40 14.59	0.352	8 37 24.6	1.99
25	1 40 14.79	0.353	8 37 25.8	2.00	25 23 21.4	1 40 23.03	0.351	8 38 12.4	1.99
26	1 40 23.26	0.352	8 38 13.7	1.99	26 23 17.6	1 40 31.45	0.350	8 39 0.0	1.98
27	1 40 31.71	0.352	8 39 1.4	1.98	27 23 13.9	1 40 29.86	0.349	8 39 47.4	1.97
28	1 40 40.14	0.351	8 39 48.9	1.97	28 23 10.1	1 40 48.25	0.349	8 40 34.6	1.96
29	1 40 48.55	0.350	8 40 36.2	1.97	29 23 6.3	1 40 56.62	0.348	8 41 21.6	1.95
30	1 40 56.93	+0.349	+ 8 41 23.3	+ 1.96	30 23 2.5	1 41 4.96	+0.347	+ 8 42 8.3	+ 1.94

NEPTUNE, 1873.

Date. 1873.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	1 41 5.29	+0.348	+ 8 42 10.2	+ 1.95	1 22 58.7	1 41 13.26	+0.346	+ 8 42 54.8	+ 1.93
2	1 41 13.62	0.346	8 42 56.8	1.94	2 22 54.9	1 41 21.54	0.345	8 43 41.1	1.92
3	1 41 21.92	0.345	8 43 43.1	1.93	3 22 51.1	1 41 29.80	0.343	8 44 27.1	1.91
4	1 41 30.20	0.344	8 44 29.2	1.92	4 22 47.3	1 41 38.02	0.342	8 45 12.9	1.90
5	1 41 38.44	0.343	8 45 15.2	1.91	5 22 43.5	1 41 46.21	0.340	8 45 58.5	1.89
6	1 41 46.65	0.341	8 46 0.9	1.90	6 22 39.7	1 41 54.36	0.339	8 46 43.7	1.88
7	1 41 54.82	0.340	8 46 46.2	1.88	7 22 35.9	1 42 2.48	0.338	8 47 28.6	1.86
8	1 42 2.95	0.338	8 47 31.2	1.87	8 22 32.1	1 42 10.56	0.336	8 48 13.2	1.85
9	1 42 11.05	0.336	8 48 15.9	1.86	9 22 28.3	1 42 18.59	0.334	8 48 57.6	1.84
10	1 42 19.10	0.335	8 49 0.4	1.85	10 22 24.5	1 42 26.58	0.332	8 49 41.7	1.83
11	1 42 27.11	0.333	8 49 44.6	1.83	11 22 20.7	1 42 34.53	0.330	8 50 25.4	1.82
12	1 42 35.08	0.331	8 50 28.4	1.82	12 22 16.9	1 42 42.43	0.328	8 51 8.8	1.80
13	1 42 43.00	0.329	8 51 11.9	1.81	13 22 13.1	1 42 50.29	0.326	8 51 51.8	1.78
14	1 42 50.87	0.327	8 51 55.0	1.79	14 22 9.3	1 42 58.09	0.324	8 52 34.5	1.77
15	1 42 58.69	0.325	8 52 37.8	1.78	15 22 5.5	1 43 5.84	0.322	8 53 16.9	1.76
16	1 43 6.46	0.323	8 53 20.2	1.76	16 22 1.7	1 43 13.55	0.320	8 53 58.9	1.74
17	1 43 14.18	0.321	8 54 2.3	1.75	17 21 57.9	1 43 21.20	0.318	8 54 40.5	1.72
18	1 43 21.85	0.318	8 54 44.0	1.73	18 21 54.1	1 43 28.80	0.315	8 55 21.7	1.71
19	1 43 29.46	0.316	8 55 25.4	1.71	19 21 50.3	1 43 36.34	0.313	8 56 2.6	1.70
20	1 43 37.02	0.314	8 56 6.3	1.70	20 21 46.5	1 43 43.82	0.311	8 56 43.1	1.68
21	1 43 44.52	0.311	8 56 46.8	1.68	21 21 42.7	1 43 51.25	0.308	8 57 23.2	1.66
22	1 43 51.96	0.309	8 57 27.0	1.66	22 21 38.9	1 43 58.62	0.306	8 58 2.9	1.64
23	1 43 59.34	0.306	8 58 6.7	1.65	23 21 35.1	1 44 5.92	0.303	8 58 42.1	1.63
24	1 44 6.65	0.303	8 58 46.0	1.63	24 21 31.3	1 44 13.15	0.300	8 59 20.9	1.61
25	1 44 13.89	0.300	8 59 24.9	1.61	25 21 27.5	1 44 20.31	0.297	8 59 59.3	1.59
26	1 44 21.06	0.297	9 0 3.3	1.59	26 21 23.6	1 44 27.40	0.294	9 0 37.2	1.57
27	1 44 28.17	0.295	9 0 41.2	1.57	27 21 19.8	1 44 34.43	0.291	9 1 14.6	1.55
28	1 44 35.21	0.292	9 1 18.7	1.55	28 21 16.0	1 44 41.39	0.288	9 1 51.5	1.53
29	1 44 42.18	0.289	9 1 55.7	1.53	29 21 12.2	1 44 48.27	0.285	9 2 28.0	1.51
30	1 44 49.07	0.286	9 2 32.3	1.51	30 21 8.4	1 44 55.08	0.282	9 3 4.1	1.49
31	1 44 55.89	0.283	9 3 8.4	1.49	31 21 4.5	1 45 1.81	0.279	9 3 39.7	1.47
June 1	1 45 2.63	0.279	9 3 44.0	1.47	1 21 0.7	1 45 8.46	0.275	9 4 14.7	1.45
2	1 45 9.28	0.276	9 4 19.0	1.45	2 20 56.9	1 45 15.03	0.272	9 4 49.2	1.43
3	1 45 15.86	0.273	9 4 53.5	1.43	3 20 53.1	1 45 21.52	0.269	9 5 23.2	1.41
4	1 45 22.36	0.269	9 5 27.6	1.41	4 20 49.2	1 45 27.93	0.265	9 5 56.8	1.39
5	1 45 28.78	0.266	9 6 1.2	1.39	5 20 45.4	1 45 34.26	0.262	9 6 29.8	1.36
6	1 45 35.12	0.262	9 6 34.2	1.36	6 20 41.6	1 45 40.51	0.259	9 7 2.3	1.34
7	1 45 41.37	0.259	9 7 6.7	1.34	7 20 37.8	1 45 46.67	0.255	9 7 34.2	1.32
8	1 45 47.53	0.255	9 7 38.7	1.32	8 20 33.9	1 45 52.74	0.251	9 8 5.6	1.30
9	1 45 53.61	0.252	9 8 10.1	1.30	9 20 30.1	1 45 58.73	0.248	9 8 36.4	1.27
10	1 45 59.61	0.248	9 8 40.9	1.27	10 20 26.3	1 46 4.64	0.244	9 9 6.7	1.25
11	1 46 5.51	0.244	9 9 11.2	1.25	11 20 22.4	1 46 10.45	0.240	9 9 36.5	1.23
12	1 46 11.32	0.240	9 9 41.0	1.23	12 20 18.6	1 46 16.16	0.236	9 10 5.8	1.20
13	1 46 17.03	0.236	9 10 10.2	1.20	13 20 14.8	1 46 21.78	0.232	9 10 34.4	1.18
14	1 46 22.65	0.232	9 10 38.8	1.18	14 20 10.9	1 46 27.31	0.228	9 11 2.4	1.16
15	1 46 28.18	0.228	9 11 6.8	1.16	15 20 7.1	1 46 32.75	0.224	9 11 29.9	1.13
16	1 46 33.62	0.224	9 11 34.3	1.13	16 20 3.3	1 46 38.08	0.220	9 11 56.8	1.11
17	1 46 38.95	0.220	9 12 1.2	1.11	17 19 59.4	1 46 43.31	0.216	9 12 23.1	1.09
18	1 46 44.18	0.216	9 12 27.5	1.08	18 19 55.5	1 46 48.45	0.212	9 12 48.8	1.06
19	1 46 49.32	0.212	9 12 53.1	1.05	19 19 51.7	1 46 53.50	0.208	9 13 13.8	1.03
20	1 46 54.36	0.208	9 13 18.1	1.03	20 19 47.8	1 46 58.44	0.203	9 13 38.3	1.01
21	1 46 59.29	0.203	9 13 42.6	1.01	21 19 44.0	1 47 3.27	0.199	9 14 2.3	0.98
22	1 47 4.12	0.199	9 14 6.5	0.98	22 19 40.1	1 47 8.00	0.195	9 14 25.6	0.95
23	1 47 8.85	0.195	9 14 29.7	0.95	23 19 36.3	1 47 12.63	0.191	9 14 48.2	0.93
24	1 47 15.47	0.190	9 14 52.2	0.92	24 19 32.4	1 47 17.16	0.186	9 15 10.1	0.90
25	1 47 17.99	0.186	9 15 14.1	0.90	25 19 28.6	1 47 21.58	0.182	9 15 31.4	0.88
26	1 47 22.40	0.181	9 15 35.4	0.87	26 19 24.7	1 47 25.89	0.177	9 15 52.1	0.85
27	1 47 26.70	0.177	9 15 56.0	0.85	27 19 20.8	1 47 30.09	0.173	9 16 12.2	0.82
28	1 47 30.89	0.172	9 16 16.0	0.82	28 19 17.0	1 47 34.18	0.168	9 16 31.6	0.79
29	1 47 34.97	0.168	9 16 35.3	0.79	29 19 13.1	1 47 38.16	0.163	9 16 50.3	0.77
30	1 47 38.94	0.163	9 16 54.0	0.77	30 19 9.2	1 47 42.03	0.159	9 17 8.4	0.74
31	1 47 42.79	+0.158	+ 9 17 12.0	+ 0.74	31 19 5.4	1 47 45.78	+0.154	+ 9 17 25.9	+ 0.72

Date. 1873.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	1 47 42.79	+0.158	+ 9 17 12.0	+ 0.74	1 19 5.4	1 47 45.78	+0.154	+ 9 17 25.9	+ 0.72
2	1 47 46.53	0.153	9 17 29.4	0.71	2 19 1.5	1 47 49.41	0.149	9 17 42.7	0.69
3	1 47 50.15	0.148	9 17 46.1	0.68	3 18 57.6	1 47 52.92	0.144	9 17 58.8	0.66
4	1 47 53.65	0.143	9 18 2.1	0.65	4 18 53.7	1 47 56.32	0.139	9 18 14.2	0.63
5	1 47 57.03	0.139	9 18 17.4	0.62	5 18 49.9	1 47 59.61	0.135	9 18 29.0	0.60
6	1 48 0.31	0.134	9 18 32.1	0.60	6 18 46.0	1 48 2.79	0.130	9 18 43.1	0.57
7	1 48 3.48	0.130	9 18 46.1	0.57	7 18 42.1	1 48 5.86	0.125	9 18 56.6	0.55
8	1 48 6.53	0.125	9 18 59.5	0.54	8 18 38.2	1 48 8.81	0.120	9 19 9.4	0.52
9	1 48 9.46	0.120	9 19 12.2	0.52	9 18 34.3	1 48 11.65	0.116	9 19 21.5	0.49
10	1 48 12.28	0.115	9 19 24.2	0.49	10 18 30.5	1 48 14.37	0.111	9 19 32.9	0.46
11	1 48 14.98	0.110	9 19 35.5	0.46	11 18 26.6	1 48 16.97	0.106	9 19 43.7	0.44
12	1 48 17.56	0.105	9 19 46.2	0.43	12 18 22.7	1 48 19.45	0.101	9 19 53.8	0.41
13	1 48 20.01	0.100	9 19 56.1	0.40	13 18 18.8	1 48 21.80	0.095	9 20 3.2	0.38
14	1 48 22.34	0.095	9 20 5.3	0.37	14 18 14.9	1 48 24.03	0.090	9 20 11.9	0.35
15	1 48 24.55	0.090	9 20 13.8	0.34	15 18 11.0	1 48 26.14	0.085	9 20 19.9	0.32
16	1 48 26.64	0.085	9 20 21.7	0.31	16 18 7.1	1 48 28.13	0.080	9 20 27.2	0.29
17	1 48 28.61	0.080	9 20 28.9	0.28	17 18 3.2	1 48 30.01	0.075	9 20 33.8	0.26
18	1 48 30.46	0.075	9 20 35.3	0.25	18 17 59.3	1 48 31.77	0.070	9 20 39.7	0.23
19	1 48 32.19	0.069	9 20 41.1	0.23	19 17 55.4	1 48 33.40	0.065	9 20 44.9	0.20
20	1 48 33.79	0.064	9 20 46.2	0.20	20 17 51.5	1 48 34.91	0.060	9 20 49.4	0.17
21	1 48 35.27	0.059	9 20 50.5	0.17	21 17 47.6	1 46 36.29	0.055	9 20 53.2	0.15
22	1 48 36.63	0.054	9 20 54.2	0.14	22 17 43.7	1 48 37.55	0.050	9 20 56.4	0.12
23	1 48 37.86	0.049	9 20 57.1	0.11	23 17 39.7	1 48 38.68	0.045	9 20 58.9	0.09
24	1 48 38.96	0.043	9 20 59.4	0.08	24 17 35.8	1 48 39.69	0.040	9 21 0.6	0.06
25	1 48 39.94	0.038	9 21 0.9	0.05	25 17 31.9	1 48 40.58	0.034	9 21 1.6	+ 0.03
26	1 48 40.80	0.033	9 21 1.8	+ 0.02	26 17 28.0	1 48 41.34	0.029	9 21 1.9	0.00
27	1 48 41.53	0.028	9 21 1.9	- 0.01	27 17 24.1	1 48 41.97	0.024	9 21 1.5	- 0.03
28	1 48 42.13	0.022	9 21 1.4	0.04	28 17 20.1	1 48 42.48	0.019	9 21 0.5	0.06
29	1 48 42.60	0.017	9 21 0.1	0.07	29 17 16.2	1 48 42.86	0.013	9 20 58.8	0.09
30	1 48 42.95	0.012	9 20 58.2	0.10	30 17 12.3	1 48 43.12	0.008	9 20 56.4	0.12
31	1 48 43.17	0.007	9 20 55.6	0.13	31 17 8.4	1 48 43.25	+0.003	9 20 53.2	0.15
Aug. 1	1 48 43.27	+0.001	9 20 52.2	0.15	1 17 4.4	1 48 43.26	-0.002	9 20 49.3	0.18
2	1 48 43.24	-0.004	9 20 48.1	0.18	2 17 0.5	1 48 43.15	0.007	9 20 44.8	0.20
3	1 48 43.09	0.009	9 20 43.4	0.21	3 16 56.6	1 48 42.91	0.012	9 20 39.6	0.23
4	1 48 42.82	0.014	9 20 38.0	0.24	4 16 52.6	1 48 42.55	0.017	9 20 33.8	0.26
5	1 48 42.42	0.019	9 20 31.9	0.27	5 16 48.7	1 48 42.07	0.023	9 20 27.3	0.29
6	1 48 41.90	0.024	9 20 25.2	0.29	6 16 44.7	1 48 41.46	0.028	9 20 20.1	0.32
7	1 48 41.26	0.029	9 20 17.8	0.32	7 16 40.8	1 48 40.73	0.033	9 20 12.2	0.34
8	1 48 40.50	0.034	9 20 9.7	0.35	8 16 36.8	1 48 39.88	0.038	9 20 3.7	0.37
9	1 48 39.61	0.039	9 20 0.9	0.38	9 16 32.9	1 48 38.92	0.043	9 19 54.5	0.40
10	1 48 38.60	0.044	9 19 51.4	0.41	10 16 28.9	1 48 37.84	0.048	9 19 44.6	0.43
11	1 48 37.48	0.049	9 19 41.3	0.44	11 16 25.0	1 48 36.64	0.053	9 19 34.0	0.45
12	1 48 36.24	0.054	9 19 30.5	0.46	12 16 21.0	1 48 35.32	0.058	9 19 22.8	0.48
13	1 48 34.87	0.060	9 19 19.1	0.49	13 16 17.1	1 48 33.88	0.063	9 19 11.0	0.51
14	1 48 33.38	0.065	9 19 7.0	0.52	14 16 13.1	1 48 32.31	0.068	9 18 58.5	0.54
15	1 48 31.77	0.070	9 18 54.2	0.55	15 16 9.2	1 48 30.62	0.073	9 18 45.3	0.57
16	1 48 30.04	0.075	9 18 40.8	0.57	16 16 5.2	1 48 28.82	0.078	9 18 31.4	0.59
17	1 48 28.19	0.079	9 18 26.7	0.60	17 16 1.2	1 48 26.90	0.083	9 18 16.9	0.62
18	1 48 26.23	0.084	9 18 12.0	0.62	18 15 57.3	1 48 24.86	0.088	9 18 1.8	0.64
19	1 48 24.15	0.089	9 17 56.7	0.65	19 15 53.3	1 48 22.70	0.092	9 17 46.2	0.66
20	1 48 21.95	0.094	9 17 40.8	0.67	20 15 49.3	1 48 20.43	0.097	9 17 30.0	0.69
21	1 48 19.63	0.099	9 17 24.3	0.70	21 15 45.3	1 48 18.04	0.102	9 17 13.1	0.72
22	1 48 17.19	0.104	9 17 7.1	0.73	22 15 41.4	1 48 15.54	0.107	9 16 55.5	0.74
23	1 48 14.64	0.109	9 16 49.3	0.75	23 15 37.4	1 48 12.93	0.111	9 16 37.3	0.77
24	1 48 11.98	0.113	9 16 30.9	0.78	24 15 33.4	1 48 10.20	0.116	9 16 18.6	0.80
25	1 48 9.21	0.118	9 16 11.9	0.80	25 15 29.4	1 48 7.36	0.121	9 15 59.3	0.82
26	1 48 6.32	0.123	9 15 52.4	0.82	26 15 25.5	1 48 4.41	0.125	9 15 39.5	0.84
27	1 48 3.32	0.127	9 15 32.3	0.85	27 15 21.5	1 48 1.35	0.130	9 15 19.1	0.86
28	1 48 0.22	0.132	9 15 11.5	0.88	28 15 17.5	1 47 58.19	0.134	9 14 58.1	0.89
29	1 47 57.01	0.136	9 14 50.2	0.90	29 15 13.5	1 47 54.92	0.138	9 14 36.5	0.91
30	1 47 53.70	0.140	9 14 28.4	0.92	30 15 9.5	1 47 51.55	0.143	9 14 14.3	0.93
31	1 47 50.28	-0.145	+ 9 14 6.0	- 0.95	31 15 5.5	1 47 48.08	-0.147	+ 9 13 51.6	- 0.96

Date. 1873.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	1 47 46.75	−0.149	+ 9 13 43.0	− 0.97	1 15 1.5	1 47 44.50	−0.151	+ 9 13 28.4	− 0.98
2	1 47 43.13	0.153	9 13 19.5	0.99	2 14 57.5	1 47 40.82	0.155	9 13 4.6	1.00
3	1 47 39.41	0.157	9 12 55.5	1.01	3 14 53.6	1 47 37.04	0.159	9 12 40.3	1.02
4	1 47 35.58	0.161	9 12 31.0	1.03	4 14 49.6	1 47 33.17	0.163	9 12 15.5	1.04
5	1 47 31.66	0.165	9 12 5.9	1.05	5 14 45.6	1 47 29.20	0.167	9 11 50.2	1.06
6	1 47 27.65	0.169	9 11 40.4	1.07	6 14 41.6	1 47 25.14	0.171	9 11 24.5	1.08
7	1 47 23.54	0.173	9 11 14.4	1.09	7 14 37.6	1 47 20.99	0.175	9 10 58.3	1.10
8	1 47 19.34	0.177	9 10 47.9	1.11	8 14 33.5	1 47 16.74	0.179	9 10 31.5	1.12
9	1 47 15.04	0.181	9 10 20.9	1.13	9 14 29.5	1 47 12.40	0.183	9 10 4.3	1.14
10	1 47 10.65	0.185	9 9 53.4	1.15	10 14 25.5	1 47 7.96	0.187	9 9 36.7	1.16
11	1 47 6.17	0.188	9 9 25.5	1.17	11 14 21.5	1 47 3.44	0.190	9 9 8.6	1.18
12	1 47 1.61	0.192	9 8 57.2	1.19	12 14 17.5	1 46 58.84	0.193	9 9 40.1	1.20
13	1 46 56.96	0.196	9 8 28.4	1.21	13 14 13.5	1 46 54.16	0.197	9 8 11.1	1.22
14	1 46 52.22	0.199	9 7 59.1	1.23	14 14 9.5	1 46 49.39	0.200	9 7 41.6	1.24
15	1 46 47.40	0.203	9 7 29.4	1.24	15 14 5.5	1 46 44.53	0.204	9 7 11.8	1.25
16	1 46 42.50	0.206	9 6 59.4	1.26	16 14 1.5	1 46 39.60	0.207	9 6 41.6	1.27
17	1 46 37.52	0.209	9 6 29.0	1.28	17 13 57.4	1 46 34.59	0.211	9 6 11.0	1.28
18	1 46 32.47	0.212	9 5 58.2	1.29	18 13 53.4	1 46 29.50	0.214	9 5 40.1	1.30
19	1 46 27.34	0.215	9 5 27.0	1.31	19 13 49.4	1 46 24.34	0.216	9 5 8.8	1.31
20	1 46 22.13	0.218	9 4 55.4	1.32	20 13 45.4	1 46 19.11	0.219	9 4 37.1	1.33
21	1 46 16.85	0.221	9 4 23.5	1.34	21 13 41.4	1 46 13.81	0.222	9 4 5.1	1.34
22	1 46 11.51	0.224	9 3 51.3	1.35	22 13 37.4	1 46 8.44	0.225	9 3 32.8	1.35
23	1 46 6.10	0.227	9 3 18.7	1.36	23 13 33.3	1 46 3.01	0.228	9 3 0.1	1.37
24	1 46 0.63	0.229	9 2 45.8	1.37	24 13 29.3	1 45 57.52	0.230	9 2 27.2	1.38
25	1 45 55.09	0.232	9 2 12.7	1.39	25 13 25.3	1 45 51.97	0.233	9 1 54.0	1.39
26	1 45 49.49	0.235	9 1 39.2	1.40	26 13 21.3	1 45 46.35	0.236	9 1 20.4	1.40
27	1 45 43.83	0.237	9 1 5.4	1.41	27 13 17.2	1 45 40.67	0.238	9 0 46.6	1.41
28	1 45 38.11	0.239	9 0 31.3	1.42	28 13 13.2	1 45 34.94	0.240	9 0 12.5	1.42
29	1 45 32.34	0.241	8 59 57.1	1.43	29 13 9.2	1 45 29.15	0.242	8 59 38.2	1.43
30	1 45 26.52	0.243	8 59 22.7	1.44	30 13 5.1	1 45 23.32	0.244	8 59 3.8	1.44
Oct. 1	1 45 20.65	0.245	8 58 48.0	1.45	1 13 1.1	1 45 17.44	0.246	8 58 29.1	1.45
2	1 45 14.73	0.247	8 58 13.1	1.46	2 12 57.1	1 45 11.52	0.248	8 57 54.2	1.46
3	1 45 8.78	0.249	8 57 38.0	1.47	3 12 53.0	1 45 5.56	0.249	8 57 19.1	1.47
4	1 45 2.79	0.251	8 57 2.7	1.47	4 12 49.0	1 44 59.56	0.251	8 56 43.8	1.47
5	1 44 56.75	0.253	8 56 27.3	1.48	5 12 45.0	1 44 53.52	0.253	8 56 8.4	1.48
6	1 44 50.67	0.254	8 55 51.7	1.49	6 12 40.9	1 44 47.44	0.254	8 55 32.8	1.49
7	1 44 44.55	0.256	8 55 16.0	1.49	7 12 36.9	1 44 41.32	0.256	8 54 57.1	1.49
8	1 44 38.40	0.257	8 54 40.1	1.50	8 12 32.9	1 44 35.17	0.257	8 54 21.3	1.50
9	1 44 32.22	0.258	8 54 4.1	1.50	9 12 28.8	1 44 29.00	0.258	8 53 45.4	1.50
10	1 44 26.02	0.259	8 53 28.1	1.50	10 12 24.8	1 44 22.80	0.259	8 53 9.4	1.51
11	1 44 19.79	0.260	8 52 51.9	1.51	11 12 20.8	1 44 16.57	0.260	8 52 33.2	1.51
12	1 44 13.53	0.261	8 52 15.6	1.51	12 12 16.7	1 44 10.31	0.261	8 51 57.0	1.51
13	1 44 7.24	0.262	8 51 39.3	1.51	13 12 12.7	1 44 4.03	0.262	8 51 20.8	1.51
14	1 44 0.94	0.262	8 51 3.0	1.51	14 12 8.7	1 43 57.75	0.262	8 50 44.6	1.51
15	1 43 54.64	0.263	8 50 26.6	1.52	15 12 4.6	1 43 51.46	0.262	8 50 8.3	1.51
16	1 43 48.33	0.263	8 49 50.2	1.52	16 12 0.6	1 43 45.16	0.263	8 49 32.0	1.51
17	1 43 42.00	0.264	8 49 13.8	1.52	17 11 56.6	1 43 38.84	0.263	8 48 55.7	1.51
18	1 43 35.65	0.265	8 48 37.4	1.52	18 11 52.5	1 43 32.51	0.264	8 48 19.4	1.51
19	1 43 29.30	0.265	8 48 1.0	1.52	19 11 48.5	1 43 26.18	0.264	8 47 43.1	1.51
20	1 43 22.95	0.265	8 47 24.6	1.52	20 11 44.5	1 43 19.84	0.264	8 47 6.8	1.51
21	1 43 16.59	0.265	8 46 48.3	1.51	21 11 40.4	1 43 13.50	0.264	8 46 30.7	1.50
22	1 43 10.24	0.265	8 46 12.2	1.51	22 11 36.4	1 43 7.16	0.264	8 45 54.7	1.50
23	1 43 3.88	0.265	8 45 36.1	1.50	23 11 32.3	1 43 0.83	0.264	8 45 18.8	1.50
24	1 42 57.53	0.264	8 45 0.1	1.50	24 11 28.3	1 42 54.50	0.263	8 44 42.9	1.49
25	1 42 51.19	0.264	8 44 24.2	1.49	25 11 24.3	1 42 48.19	0.263	8 44 7.2	1.48
26	1 42 44.87	0.263	8 43 48.5	1.49	26 11 20.2	1 42 41.89	0.262	8 43 31.7	1.48
27	1 42 38.56	0.263	8 43 12.9	1.48	27 11 16.2	1 42 35.61	0.261	8 42 56.3	1.47
28	1 42 32.26	0.262	8 42 37.5	1.47	28 11 12.2	1 42 29.34	0.261	8 42 21.1	1.46
29	1 42 25.99	0.261	8 42 2.3	1.46	29 11 8.1	1 42 23.10	0.260	8 41 46.0	1.46
30	1 42 19.75	0.260	8 41 27.2	1.46	30 11 4.1	1 42 16.88	0.259	8 41 11.1	1.45
31	1 42 13.53	0.259	8 40 52.3	1.45	31 11 0.1	1 42 10.69	0.258	8 40 36.4	1.44
32	1 42 7.33	−0.258	+ 8 40 17.7	− 1.44	32 10 56.0	1 42 4.52	−0.256	+ 8 40 2.0	− 1.43

Date. 1873.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	1 42 7.33	−0.258	+ 8 40 17.7	− 1.44	1 10 56.0	1 42 4.52	−0.256	+ 8 40 2.0	− 1.43
2	1 42 1.16	0.256	8 39 43.3	1.43	2 10 52.0	1 41 58.39	0.255	8 39 27.9	1.42
3	1 41 55.03	0.255	8 39 9.2	1.42	3 10 47.9	1 41 52.29	0.253	8 38 54.0	1.41
4	1 41 48.94	0.253	8 38 35.3	1.41	4 10 43.9	1 41 46.23	0.252	8 38 20.3	1.40
5	1 41 42.88	0.252	8 38 1.7	1.40	5 10 39.9	1 41 40.20	0.250	8 37 46.9	1.39
6	1 41 36.85	0.250	8 37 28.3	1.39	6 10 35.8	1 41 34.21	0.248	8 37 13.7	1.38
7	1 41 30.86	0.248	8 36 55.2	1.37	7 10 31.8	1 41 28.27	0.247	8 36 40.9	1.36
8	1 41 24.93	0.246	8 36 22.5	1.36	8 10 27.8	1 41 22.37	0.245	8 36 8.4	1.35
9	1 41 19.05	0.244	8 35 50.1	1.34	9 10 23.8	1 41 16.52	0.243	8 35 36.3	1.33
10	1 41 13.21	0.242	8 35 18.1	1.33	10 10 19.7	1 41 10.72	0.241	8 35 4.5	1.32
11	1 41 7.42	0.240	8 34 46.4	1.32	11 10 15.7	1 41 4.97	0.239	8 34 33.0	1.31
12	1 41 1.68	0.238	8 34 15.0	1.30	12 10 11.7	1 40 59.27	0.236	8 34 1.8	1.29
13	1 40 56.00	0.236	8 33 44.0	1.28	13 10 7.7	1 40 53.63	0.234	8 33 31.1	1.27
14	1 40 50.38	0.233	8 33 13.5	1.26	14 10 3.6	1 40 48.04	0.231	8 33 0.8	1.25
15	1 40 44.81	0.231	8 32 43.3	1.25	15 9 59.6	1 40 42.52	0.229	8 32 30.9	1.24
16	1 40 39.31	0.228	8 32 13.5	1.23	16 9 55.6	1 40 37.07	0.226	8 32 1.4	1.22
17	1 40 33.88	0.225	8 31 44.2	1.21	17 9 51.6	1 40 31.68	0.223	8 31 32.3	1.20
18	1 40 28.51	0 222	8 31 15.3	1.19	18 9 47.5	1 40 26.35	0.220	8 31 3.7	1.18
19	1 40 23.21	0.219	8 30 46.9	1.17	19 9 43.5	1 40 21.10	0.217	8 30 35.5	1.16
20	1 40 17.99	0.216	8 30 18.9	1.15	20 9 39.5	1 40 15.92	0.214	8 30 7.8	1.14
21	1 40 12.84	0.213	8 29 51.4	1.13	21 9 35.5	1 40 10.82	0.211	8 29 40.6	1.12
22	1 40 7.77	0.210	8 29 24.4	1.11	22 9 31.5	1 40 5.79	0.208	8 29 13.9	1.10
23	1 40 2.77	0.206	8 28 58.0	1.09	23 9 27.5	1 40 0.84	0.205	8 28 47.8	1.08
24	1 39 57.86	0.203	8 28 32.1	1.07	24 9 23.4	1 39 55.97	0.201	8 28 22.2	1.06
25	1 39 53.03	0.200	8 28 6.7	1.05	25 9 19.4	1 39 51.18	0.198	8 27 57.0	1.04
26	1 39 48.28	0.196	8 27 41.8	1.03	26 9 15.4	1 39 46.48	0.194	8 27 32.4	1.01
27	1 39 43.62	0.192	8 27 17.5	1.00	27 9 11.4	1 39 41.87	0.190	8 27 8.4	0.99
28	1 39 39.05	0.188	8 26 53.7	0.98	28 9 7.4	1 39 37.35	0.187	8 26 44.9	0.97
29	1 39 34.57	0.185	8 26 30.5	0.95	29 9 3.4	1 39 32.91	0.183	8 26 22.0	0.94
30	1 39 30.18	0.181	8 26 7.9	0.93	30 8 59.4	1 39 28.57	0.179	8 25 59.6	0.92
Dec. 1	1 39 25.89	0.177	8 25 45.8	0.91	1 8 55.4	1 39 24.33	0.175	8 25 37.9	0.89
2	1 39 21.69	0.173	8 25 24.4	0.88	2 8 51.4	1 39 20.18	0.171	8 25 16.8	0.87
3	1 39 17.59	0.169	8 25 3.6	0.86	3 8 47.4	1 39 16.13	0.167	8 24 56.2	0.85
4	1 39 13.59	0.165	8 24 43.3	0.83	4 8 43.4	1 39 12.17	0.163	8 24 36.2	0.82
5	1 39 9.69	0.160	8 24 23.7	0.80	5 8 39.4	1 39 8.32	0.158	8 24 16.9	0.79
6	1 39 5.90	0.156	8 24 4.7	0.78	6 8 35.4	1 39 4.58	0.154	8 23 58.2	0.77
7	1 39 2.21	0.152	8 23 46.4	0.75	7 8 31.4	1 39 0.94	0.150	8 23 40.1	0.74
8	1 38 58.62	0.147	8 23 28.7	0.72	8 8 27.4	1 38 57.40	0.146	8 23 22.7	0.71
9	1 38 55.14	0.143	8 23 11.7	0.70	9 8 23.5	1 38 53.96	0.141	8 23 6.0	0.68
10	1 38 51.77	0.138	8 22 55.3	0.67	10 8 19.5	1 38 50.63	0.137	8 22 49.9	0.65
11	1 38 48.50	0.134	8 22 39.6	0.64	11 8 15.5	1 38 47.41	0.132	8 22 34.5	0.63
12	1 38 45.34	0.129	8 22 24.6	0.61	12 8 11.5	1 38 44.31	0.127	8 22 19.7	0.60
13	1 38 42.30	0.124	8 22 10.2	0.58	13 8 7.5	1 38 41.32	0.122	8 22 5.6	0.57
14	1 38 39.38	0.119	8 21 56.5	0.55	14 8 3.5	1 38 38.44	0.118	8 21 52.2	0.54
15	1 38 36.57	0.115	8 21 43.6	0.52	15 7 59.6	1 38 35.67	0.113	8 21 39.5	0.51
16	1 38 33.87	0.110	8 21 31.3	0.50	16 7 55.6	1 38 33.02	0.108	8 21 27.5	0.49
17	1 38 31.29	0.105	8 21 19.7	0.47	17 7 51.6	1 38 30.49	0.103	8 21 16.2	0.46
18	1 38 28.83	0.100	8 21 8.9	0.44	18 7 47.6	1 38 28.08	0.098	8 21 5.6	0.43
19	1 38 26.49	0.095	8 20 58.8	0.41	19 7 43.7	1 38 25.78	0.093	8 20 55.8	0.39
20	1 38 24.27	0.090	8 20 49.4	0.38	20 7 39.7	1 38 23.60	0.088	8 20 46.7	0.36
21	1 38 22.17	0.085	8 20 40.8	0.34	21 7 35.7	1 38 21.55	0.083	8 20 38.3	0.33
22	1 38 20.20	0.080	8 20 32.9	0.31	22 7 31.8	1 38 19.62	0.078	8 20 30.7	0.30
23	1 38 18.35	0.074	8 20 25.8	0.28	23 7 27.8	1 38 17.82	0.072	8 20 23.8	0.27
24	1 38 16.63	0.069	8 20 19.4	0.25	24 7 23.9	1 38 16.14	0.067	8 20 17.6	0.24
25	1 38 15.03	0.064	8 20 13.7	0.22	25 7 19.9	1 38 14.58	0.062	8 20 12.2	0.21
26	1 38 13.55	0.059	8 20 8.8	0.19	26 7 16.0	1 38 13.14	0.057	8 20 7.6	0.18
27	1 38 12.20	0.053	8 20 4.7	0.16	27 7 12.0	1 38 11.84	0.051	8 20 3.7	0.15
28	1 38 10.99	0.048	8 20 1.3	0 13	28 7 8.1	1 38 10.67	0.046	8 20 0.5	0.12
29	1 38 9.90	0.043	8 19 58.6	0.10	29 7 4.1	1 38 9.62	0.041	8 19 58.0	0.09
30	1 38 8.93	0.037	8 19 56.7	0.06	30 7 0.2	1 38 8.69	0.036	8 19 56.3	0.05
31	1 38 8.10	0.032	8 19 55.6	0.03	31 6 56.2	1 38 7.89	0.031	8 19 55.4	− 0.02
32	1 38 7.39	−0.027	+ 8 19 55.3	− 0.00	32 6 52.3	1 38 7.21	−0.026	+ 8 19 55.3	+ 0.01

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
Jan. 1	9″.52	8″.22	5″.90	3″.59	7″.95	3″.37	0ˢ.26	0ˢ.55	0ˢ.23
6	8.58	8.48	6.11	3.24	8.20	3.49	0.23	0.56	0.24
11	7.90	8.76	6.33	2.98	8.47	3.62	0.22	0.57	0.24
16	7.40	9.07	6.57	2.79	8.77	3.76	0.20	0.59	0.25
21	7.03	9.40	6.83	2.65	9.09	3.90	0.19	0.61	0.26
26	6.76	9.77	7.11	2.55	9.44	4.06	0.19	0.63	0.28
31	6.56	10.17	7.42	2.48	9.83	4.24	0.18	0.65	0.29
Feb. 5	6.43	10.62	7.75	2.43	10.26	4.43	0.17	0.68	0.30
10	6.36	11.12	8.10	2.40	10.74	4.63	0.17	0.72	0.32
15	6.35	11.66	8.49	2.40	11.26	4.85	0.17	0.76	0.33
20	6.41	12.26	8.90	2.42	11.84	5.08	0.17	0.80	0.35
25	6.57	12.93	9.34	2.48	12.49	5.34	0.17	0.85	0.37
Mar. 2	6.87	13.69	9.82	2.59	13.22	5.61	0.17	0.91	0.39
7	7.38	14.54	10.33	2.79	14.04	5.90	0.19	0.97	0.41
12	8.18	15.49	10.87	3.09	14.96	6.21	0.21	1.04	0.43
17	9.34	16.58	11.44	3.53	16.01	6.53	0.24	1.13	0.45
22	10.86	17.79	12.03	4.10	17.18	6.87	0.28	1.23	0.47
27	12.58	19.18	12.64	4.75	18.53	7.21	0.32	1.33	0.50
April 1	14.16	20.71	13.24	5.35	20.04	7.56	0.36	1.45	0.52
6	15.11	22.41	13.82	5.70	21.68	7.90	0.38	1.58	0.54
11	15.16	24.25	14.37	5.72	23.44	8.21	0.38	1.72	0.56
16	14.46	26.19	14.85	5.46	25.30	8.48	0.36	1.86	0.58
21	13.39	28.05	15.25	5.05	27.10	8.71	0.34	1.98	0.60
26	12.22	29.59	15.53	4.61	28.63	8.87	0.31	2.07	0.61
May 1	11.11	30.57	15.68	4.19	29.60	8.96	0.28	2.11	0.61
6	10.12	30.84	15.70	3.82	29.80	8.97	0.26	2.12	0.61
11	9.25	30.27	15.59	3.49	29.24	8.91	0.23	2.06	0.61
16	8.50	29.03	15.37	3.21	28.04	8.78	0.22	1.95	0.60
21	7.87	27.33	15.06	2.97	26.40	8.60	0.20	1.82	0.58
26	7.35	25.40	14.67	2.78	24.54	8.37	0.19	1.68	0.57
31	6.97	23.45	14.22	2.64	22.67	8.12	0.19	1.55	0.55
June 5	6.74	21.63	13.75	2.55	20.89	7.85	0.18	1.43	0.53
10	6.69	19.95	13.27	2.53	19.26	7.58	0.19	1.32	0.51
15	6.82	18.44	12.79	2.58	17.81	7.31	0.19	1.22	0.50
20	7.11	17.10	12.32	2.68	16.51	7.04	0.20	1.13	0.48
25	7.53	15.91	11.86	2.84	15.37	6.78	0.21	1.06	0.46
30	8.05	14.87	11.43	3.04	14.36	6.53	0.22	1.00	0.45
July 5	8.68	13.94	11.02	3.28	13.47	6.29	0.23	0.94	0.43
10	9.41	13.12	10.63	3.55	12.68	6.07	0.25	0.89	0.42
15	10.26	12.39	10.26	3.87	11.97	5.86	0.27	0.84	0.40
20	11.20	11.74	9.92	4.23	11.34	5.67	0.29	0.80	0.39
25	12.26	11.15	9.60	4.62	10.77	5.48	0.31	0.76	0.38
30	13.32	10.62	9.30	5.03	10.27	5.31	0.34	0.73	0.37
Aug. 4	14.22	10.15	9.02	5.37	9.81	5.15	0.36	0.70	0.36
9	14.65	9.72	8.76	5.53	9.40	5.00	0.37	0.67	0.35
14	14.27	9.33	8.51	5.38	9.02	4.86	0.37	0.65	0.34
19	13.06	8.98	8.28	4.93	8.68	4.73	0.34	0.62	0.34
24	11.43	8.66	8.06	4.32	8.37	4.60	0.30	0.60	0.33
29	9.83	8.37	7.85	3.71	8.08	4.48	0.26	0.57	0.32
Sept. 3	8.52	8.10	7.65	3.22	7.82	4.37	0.22	0.55	0.32
8	7.59	7.86	7.47	2.86	7.59	4.27	0.20	0.53	0.31
13	6.97	7.63	7.30	2.63	7.37	4.17	0.18	0.51	0.30
18	6.60	7.42	7.13	2.49	7.17	4.08	0.17	0.49	0.30
23	6.38	7.23	6.98	2.41	6.98	3.99	0.16	0.48	0.29
28	6.28	7.05	6.83	2.37	6.81	3.90	0.16	0.46	0.29
Oct. 3	6.26	6.88	6.69	2.36	6.65	3.82	0.16	0.45	0.28
8	6.30	6.73	6.55	2.38	6.50	3.74	0.16	0.44	0.28
13	6.41	6.59	6.42	2.42	6.37	3.67	0.17	0.43	0.27
18	6.58	6.46	6.30	2.48	6.24	3.60	0.17	0.42	0.27
23	6.82	6.34	6.18	2.57	6.12	3.53	0.18	0.41	0.26

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
Oct. 28	7″.15	6″.23	6″.06	2″.70	6″.02	3″.46	$0^{s}.19$	$0^{s}.40$	$0^{s}.25$
Nov. 2	7.60	6.13	5.95	2.87	5.92	3.40	0.21	0.40	0.25
7	8.22	6.03	5.84	3.10	5.83	3.34	0.23	0.39	0.24
12	9.07	5.94	5.74	3.42	5.74	3.28	0.25	0.39	0.24
17	10.20	5.86	5.64	3.85	5.66	3.22	0.28	0.39	0.23
22	11.60	5.78	5.54	4.38	5.59	3.16	0.32	0.38	0.23
27	12.81	5.71	5.44	4.84	5.52	3.11	0.35	0.38	0.22
Dec. 2	12.90	5.65	5.35	4.87	5.46	3.06	0.34	0.38	0.22
7	11.74	5.59	5.26	4.43	5.40	3.01	0.31	0.38	0.21
12	10.27	5.53	5.17	3.87	5.34	2.96	0.27	0.38	0.21
17	9.05	5.48	5.09	3.42	5.29	2.91	0.24	0.38	0.20
22	8.17	5.44	5.01	3.08	5.25	2.86	0.22	0.38	0.20
27	7.54	5.40	4.93	2.85	5.21	2.82	0.20	0.38	0.19
32	7.09	5.35	4.85	2.67	5.18	2.77	0.19	0.38	0.19
Mean Noon.	♃	♄	♅	♃	♄	♅	♃	♄	♅
Jan. 1	1″.89	0″.81	0″.50	20″.16	7″.12	1″.90	$1^{s}.46$	$0^{s}.55$	$0^{s}.12$
11	1.94	0.81	0.50	20.65	7.11	1.91	1.50	0.54	0.12
21	1.98	0.81	0.50	21.05	7.12	1.91	1.53	0.54	0.12
31	2.01	0.81	0.50	21.33	7.14	1.90	1.55	0.55	0.12
Feb. 10	2.02	0.81	0.50	21.47	7.18	1.90	1.56	0.55	0.12
20	2.02	0.82	0.50	21.46	7.23	1.90	1.57	0.55	0.12
Mar. 2	2.00	0.83	0.50	21.29	7.30	1.89	1.56	0.56	0.12
12	1.97	0.84	0.49	20.99	7.39	1.88	1.54	0.56	0.11
22	1.93	0.85	0.49	20.58	7.49	1.87	1.51	0.57	0.11
April 1	1.89	0.86	0.49	20.09	7.60	1.86	1.48	0.58	0.11
11	1.84	0.87	0.48	19.54	7.72	1.84	1.44	0.59	0.11
21	1.78	0.89	0.48	18.98	7.85	1.82	1.40	0.59	0.11
May 1	1.73	0.90	0.48	18.41	7.98	1.80	1.36	0.60	0.11
11	1.68	0.92	0.47	17.85	8.11	1.78	1.31	0.61	0.11
21	1.63	0.93	0.47	17.34	8.24	1.77	1.27	0.62	0.11
31	1.58	0.95	0.46	16.86	8.37	1.76	1.24	0.63	0.11
June 10	1.54	0.96	0.46	16.42	8.48	1.75	1.20	0.64	0.10
20	1.51	0.97	0.46	16.03	8.57	1.74	1.17	0.65	0.10
30	1.48	0.98	0.46	15.69	8.64	1.73	1.14	0.66	0.10
July 10	1.45	0.98	0.46	15.39	8.69	1.72	1.12	0.66	0.10
20	1.43	0.99	0.45	15.15	8.71	1.72	1.10	0.66	0.10
30	1.41	0.99	0.45	14.96	8.70	1.71	1.08	0.66	0.10
Aug. 9	1.39	0.98	0.45	14.81	8.66	1.71	1.07	0.66	0.10
19	1.38	0.97	0.46	14.71	8.60	1.71	1.06	0.66	0.10
29	1.38	0.96	0.46	14.66	8.51	1.72	1.05	0.65	0.10
Sept. 8	1.38	0.95	0.46	14.66	8.41	1.73	1.05	0.64	0.10
18	1.38	0.94	0.46	14.71	8.29	1.74	1.05	0.63	0.10
28	1.39	0.92	0.47	14.80	8.16	1.76	1.06	0.62	0.11
Oct. 8	1.40	0.91	0.47	14.94	8.02	1.77	1.07	0.61	0.11
18	1.42	0.89	0.47	15.14	7.89	1.79	1.08	0.60	0.11
28	1.44	0.88	0.48	15.38	7.76	1.80	1.09	0.59	0.11
Nov. 7	1.47	0.86	0.48	15.67	7.64	1.82	1.11	0.58	0.11
17	1.50	0.85	0.49	16.02	7.53	1.84	1.14	0.57	0.11
27	1.54	0.84	0.49	16.43	7.43	1.86	1.17	0.57	0.11
Dec. 7	1.58	0.83	0.49	16.87	7.34	1.87	1.20	0.56	0.11
17	1.63	0.82	0.50	17.36	7.27	1.89	1.23	0.55	0.11
27	1.68	0.82	0.50	17.89	7.21	1.90	1.27	0.55	0.11
37	1.73	0.81	0.50	18.45	7.17	1.91	1.31	0.54	0.11

Horizontal Parallax of Neptune, 0″.30, Jan. 1 to Jan. 23; July 10 to Sept. 13; after Nov. 22.
" " " 0″.29, Jan. 24 to July 9.
" " " 0″.31, Sept. 14 to Nov. 22.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.			λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							°	′	″	″	″	9.9
Jan. 1.0	+.1950674	1345	−.8840725	0674	−.3836173	5947	281	26	33.9	48.3	−0.64	926677
1.5	.2036358	7023	.8824455	4399	.3829114	8886	281	57	9.5	23.8	0.65	926678
2.0	.2121880	2540	.8807495	7435	.3821756	1526	282	27	45.0	59.2	0.66	926685
2.5	.2207233	7887	.8789848	9783	.3814100	3868	282	58	20.4	34.5	0.66	926696
3.0	.2292410	3058	.8771515	1446	.3806146	5912	283	28	55.7	69.7	0.65	926712
3.5	.2377405	8047	.8752498	2425	.3797894	7658	283	59	30.9	44.8	0.64	926732
4.0	.2462210	2847	.8732800	2723	.3789346	9108	284	30	6.0	19.8	0.62	926757
4.5	.2546819	7450	.8712422	2341	.3780503	0263	285	0	41.0	54.7	0.59	926788
5.0	.2631225	1850	.8691366	1281	.3771366	1125	285	31	15.9	29.5	0.55	926824
5.5	.2715422	6041	.8669634	9545	.3761935	1692	286	1	50.7	64.2	0.51	926866
6.0	.2799403	:0017	.8647229	7136	.3752211	1967	286	32	25.4	38.8	0.47	926914
6.5	.2883163	3771	.8624152	4055	.3742195	1949	287	3	0.0	13.3	0.42	926967
7.0	.2966696	7298	.8600406	0305	.3731888	1641	287	33	34.4	47.6	0.36	927026
7.5	.3049994	:0590	.8575993	5888	.3721292	1043	288	4	8.7	21.8	0.30	927091
8.0	.3133051	3642	.8550916	0808	.3710408	0158	288	34	42.8	55.8	0.24	927162
8.5	.3215862	6447	.8525176	5064	.3699236	8984	289	5	16.8	29.7	0.18	927239
9.0	.3298421	9000	.8498776	8661	.3687777	7524	289	35	50.6	63.4	0.11	927323
9.5	.3380722	1295	.8471717	1599	.3676032	5778	290	6	24.3	37.0	−0.04	927413
10.0	.3462758	3326	.8444003	3882	.3664003	3748	290	36	57.9	70.6	+0.03	927510
10.5	.3544523	5085	.8415635	5510	.3651692	1435	291	7	31.4	44.0	0.09	927614
11.0	.3626012	6568	.8386616	6488	.3639098	8840	291	38	4.7	17.2	0.15	927724
11.5	.3707220	7770	.8356949	6818	.3626222	5963	292	8	37.9	50.3	0.21	927841
12.0	.3788140	8684	.8326636	6502	.3613065	2805	292	39	10.9	23.2	0.27	927965
12.5	.3868766	9304	.8295679	5542	.3599630	9369	293	9	43.8	56.0	0.32	928096
13.0	.3949092	9624	.8264080	3940	.3585918	5656	293	40	16.6	28.7	0.36	928234
13.5	.4029111	9637	.8231842	1699	.3571929	1666	294	10	49.3	61.3	0.39	928380
14.0	.4108819	9340	.8198967	8821	.3557665	7401	294	41	21.9	33.8	0.42	928533
14.5	.4188210	8725	.8165457	5308	.3543126	2861	295	11	54.4	66.2	0.44	928692
15.0	.4267279	7788	.8131316	1165	.3528313	8047	295	42	26.7	38.5	0.45	928859
15.5	.4346019	6522	.8096546	6392	.3513226	2959	296	12	58.9	70.6	0.47	929033
16.0	.4424425	4922	.8061149	0992	.3497867	7599	296	43	31.0	42.6	0.48	929213
16.5	.4502490	2981	.8025128	4968	.3482238	1969	297	14	3.0	14.5	0.47	929400
17.0	.4580209	0694	.7988484	8322	.3466339	6070	297	44	34.9	46.3	0.46	929593
17.5	.4657576	8055	.7951221	1057	.3450171	:9901	298	15	6.7	18.0	0.44	929793
18.0	.4734586	5060	.7913340	3174	.3433735	3465	298	45	38.4	49.6	0.41	929999
18.5	.4811232	1700	.7874845	4676	.3417033	6762	299	16	10.0	21.1	0.37	930211
19.0	.4887509	7971	.7835739	5568	.3400065	:9794	299	46	41.5	52.6	0.33	930429
19.5	.4963411	3867	.7796022	5849	.3382833	2561	300	17	12.8	23.8	0.28	930652
20.0	.5038932	9383	.7755698	5523	.3365338	5066	300	47	44.0	55.0	0.23	930882
20.5	.5114066	4511	.7714771	4594	.3347581	7308	301	18	15.2	26.1	0.17	931117
21.0	.5188807	9246	.7673244	3065	.3329564	9291	301	48	46.4	57.2	0.10	931358
21.5	.5263149	3582	.7631119	0938	.3311288	1015	302	19	17.4	28.1	+0.04	931604
22.0	.5337086	7514	.7588400	8218	.3292755	2482	302	49	48.2	58.6	−0.02	931855
22.5	.5410610	1032	.7545089	4905	.3273965	3691	303	20	18.9	29.4	0.09	932111
23.0	.5483717	4133	.7501190	1004	.3254919	4645	303	50	49.4	59.8	0.16	932371
23.5	.5556401	6812	.7456706	6518	.3235620	5346	304	21	19.8	30.1	0.23	932636
24.0	.5628656	9062	.7411640	1451	.3216071	5797	304	51	50.0	60.3	0.29	932906
24.5	.5700475	0875	.7365997	5806	.3196270	5996	305	22	20.1	30.3	0.36	933181
25.0	.5771853	2247	.7319780	9588	.3176219	5945	305	52	50.0	60.2	0.42	933453
25.5	.5842783	3171	.7272992	2798	.3155920	5646	306	23	19.7	29.8	0.47	933733
26.0	.5913259	3642	.7225636	5441	.3135376	5103	306	53	49.3	59.3	0.52	934016
26.5	.5983276	3653	.7177718	7521	.3114587	4314	307	24	18.6	28.5	0.57	934304
27.0	.6052830	3201	.7129242	9044	.3093555	3282	307	54	47.7	57.5	0.61	934596
27.5	.6121914	2281	.7080211	0012	.3072281	2008	308	25	16.5	26.2	0.64	934891
28.0	.6190521	0882	.7030629	0429	.3050768	0496	308	55	45.1	54.7	0.67	935190
28.5	.6258646	9001	.6980500	0299	.3029018	8746	309	26	13.5	23.0	0.69	935492
29.0	.6326285	6635	.6929829	9627	.3007032	6761	309	56	41.6	51.1	0.71	935798
29.5	.6393431	3776	.6878619	8416	.2984812	4541	310	27	9.4	18.8	0.71	936107
30.0	.6460079	0419	.6826875	6671	.2962360	2090	310	57	36.9	46.3	0.71	936419
30.5	.6526224	6558	.6774603	4398	.2939678	9408	311	28	4.1	13.4	0.69	936734
31.0	+.6591861	2190	−.6721807	1601	−.2916768	6499	311	58	31.0	40.2	−0.67	937053

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

Date. 1873.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
										9.9
Jan. 31.5	+.6656984	7308	−.6668490	8283	−.2893632	3363	312° 28′ 57″.6	66″.7	−0″.64	937376
Feb. 1.0	.6721588	1907	.6614658	4450	.2870272	0004	312 59 23.8	32.8	0.69	937703
1.5	.6785668	5981	.6560315	0106	.2846690	6422	313 29 49.7	58.6	0.56	938033
2.0	.6849220	9528	.6505467	5257	.2822888	2621	314 0 15.2	24.1	0.52	938367
2.5	.6912240	2543	.6450118	:9907	.2798868	8602	314 30 40.4	49.2	0.47	938705
3.0	.6974722	5020	.6394272	4061	.2774633	4368	315 1 5.2	14.0	0.42	939047
3.5	.7036662	6956	.6337935	7723	.2750185	:9920	315 31 29.7	38.4	0.36	939393
4.0	.7098057	8347	.6281112	0900	.2725525	5261	316 1 53.7	62.4	0.30	939744
4.5	.7158902	9187	.6223807	3594	.2700656	0393	316 32 17.4	26.0	0.24	940099
5.0	.7219192	9471	.6166024	5811	.2675579	5317	317 2 40.7	49.2	0.18	940459
5.5	.7278924	9197	.6107768	7554	.2650298	0037	317 33 3.7	12.1	0.12	940823
6.0	.7338093	8361	.6049045	8831	.2624814	4554	318 3 26.2	34.5	−0.05	941193
6.5	.7396696	6959	.5989859	9645	.2599129	8870	318 33 48.4	56.6	+0.02	941567
7.0	.7454728	4987	.5930215	0001	.2573245	2987	319 4 10.1	18.3	0.09	941947
7.5	.7512185	2439	.5870117	:9902	.2547165	6908	319 34 31.5	39.6	0.15	942332
8.0	.7569064	9313	.5809571	9356	.2520890	0634	320 4 52.5	60.6	0.21	942722
8.5	.7625360	5604	.5748582	8367	.2494423	4168	320 35 13.1	21.1	0.26	943117
9.0	.7681070	1310	.5687154	6939	.2467766	7512	321 5 33.3	41.3	0.31	943518
9.5	.7736190	6425	.5625292	5077	.2440922	0669	321 35 53.1	61.0	0.35	943924
10.0	.7790717	0948	.5563002	2787	.2413891	3640	322 6 12.5	20.3	0.38	944336
10.5	.7844647	4873	.5500287	0072	.2386676	6426	322 36 31.6	39.3	0.41	944754
11.0	.7897976	8198	.5437153	6938	.2359280	9032	323 6 50.2	57.8	0.44	945177
11.5	.7950701	0918	.5373604	3389	.2331704	1457	323 37 8.5	16.0	0.46	945606
12.0	.8002819	3031	.5309646	9431	.2303951	3706	324 7 26.4	33.9	0.45	946041
12.5	.8054327	4535	.5245282	5067	.2276022	5778	324 37 44.0	51.4	0.45	946481
13.0	.8105220	5424	.5180516	0302	.2247920	7678	325 8 1.2	8.6	0.44	946926
13.5	.8155495	5694	.5115353	5138	.2219645	9404	325 38 18.1	25.4	0.42	947377
14.0	.8205149	5344	.5049799	9586	.2191201	0962	326 8 34.6	41.9	0.40	947834
14.5	.8254178	4369	.4983857	3644	.2162589	2352	326 38 50.8	58.0	0.37	948296
15.0	.8302577	2764	.4917532	7319	.2133812	3577	327 9 6.6	13.7	0.33	948763
15.5	.8350343	0525	.4850829	0616	.2104871	4637	327 39 22.1	29.1	0.28	949233
16.0	.8397474	7652	.4783752	3540	.2075768	5536	328 9 37.3	44.3	0.23	949708
16.5	.8443966	4140	.4716307	6095	.2046505	6274	328 39 52.2	59.1	0.18	950188
17.0	.8489814	9984	.4648498	8287	.2017085	6857	329 10 6.7	13.6	0.12	950673
17.5	.8535015	5181	.4580332	0121	.1987510	7284	329 40 20.9	27.7	+0.06	951162
18.0	.8579567	9729	.4511813	1603	.1957782	7558	330 10 34.8	41.6	−0.01	951655
18.5	.8623465	3623	.4442946	2736	.1927903	7681	330 40 48.3	55.0	0.07	952153
19.0	.8666705	6859	.4373737	3528	.1897876	7656	331 11 1.5	8.2	0.14	952656
19.5	.8709285	9435	.4304191	3982	.1867703	7485	331 41 14.3	20.9	0.21	953161
20.0	.8751201	1347	.4234313	4105	.1837385	7169	332 11 26.8	33.3	0.28	953669
20.5	.8792450	2592	.4164109	3901	.1806925	6711	332 41 39.0	45.4	0.34	954180
21.0	.8833028	3167	.4093584	3377	.1776326	6114	333 11 50.8	57.2	0.40	954694
21.5	.8872932	3067	.4022742	2535	.1745590	5380	333 42 2.2	8.5	0.46	955210
22.0	.8912159	2290	.3951591	1385	.1714718	4510	334 12 13.3	19.6	0.52	955729
22.5	.8950706	0834	.3880135	:9929	.1683713	3507	334 42 24.1	30.3	0.57	956251
23.0	.8988569	8694	.3808379	8174	.1652578	2374	335 12 34.5	40.7	0.61	956775
23.5	.9025745	5866	.3736329	6124	.1621316	1114	335 42 44.4	50.5	0.64	957301
24.0	.9062232	2349	.3663991	3787	.1589928	9728	336 12 54.0	60.1	0.67	957829
24.5	.9098026	8140	.3591371	1167	.1558417	8219	336 43 3.2	9.2	0.71	958360
25.0	.9133125	3236	.3518474	8271	.1526787	6592	337 13 12.0	17.9	0.70	958892
25.5	.9167525	7633	.3445307	5104	.1495039	4846	337 43 20.4	26.2	0.70	959425
26.0	.9201225	1329	.3371876	1674	.1463175	2984	338 13 28.4	34.2	0.70	959959
26.5	.9234222	4323	.3298187	7986	.1431199	1010	338 43 35.9	41.6	0.69	960495
27.0	.9266512	6610	.3224246	4046	.1399114	8927	339 13 43.0	48.7	0.68	961033
27.5	.9298094	8188	.3150059	:9859	.1366921	6736	339 43 49.6	55.2	0.66	961572
28.0	.9328965	9056	.3075633	5434	.1334624	4442	340 13 55.7	61.3	0.63	962112
28.5	.9359125	9213	.3000973	0775	.1302226	2047	340 44 1.4	6.9	0.60	962653
Mar. 1.0	.9388570	8655	.2926085	5888	.1269729	9553	341 14 6.6	12.1	0.56	963195
1.5	.9417298	7380	.2850977	0780	.1237135	6961	341 44 11.2	16.6	0.51	963739
2.0	.9445308	5387	.2775655	5459	.1204448	4277	342 14 15.4	20.7	0.46	964285
2.5	+.9472598	2674	−.2700124	:9929	−.1171670	1501	342 44 19.1	24.3	−0.40	964832

NOTE.—: denotes a change in the preceding figure.

SUN'S COÖRDINATES, 1873.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Mar. 3.0	+.9499167	9240	−.2624390	4196	−.1138805	8639	343° 14′ 22.2″	27.4″	−0.34″	9.9 965381
3.5	.9525012	5082	.2548460	8267	.1105853	5689	343 44 24.8	29.9	0.28	965931
4.0	.9550133	0200	.2472340	2148	.1072819	2658	344 14 26.9	31.9	0.21	966483
4.5	.9574527	4591	.2396035	5844	.1039705	9547	344 44 28.4	33.3	0.14	967037
5.0	.9598193	8255	.2319551	9361	.1006514	6359	345 14 29.4	34.3	0.07	967593
5.5	.9621130	1189	.2242896	2707	.0973248	3095	345 44 29.8	34.7	−0.01	968150
6.0	.9643339	3395	.2166075	5887	.0939910	9760	346 14 29.7	34.6	+0.06	968709
6.5	.9664819	4873	.2089093	8906	.0906503	6356	346 44 29.1	33.9	0.12	969270
7.0	.9685568	5620	.2011957	1771	.0873029	2885	347 14 27.9	32.7	0.18	969834
7.5	.9705586	5635	.1934672	4487	.0839491	9349	347 44 26.2	30.9	0.23	970401
8.0	.9724872	4918	.1857245	7061	.0805891	5752	348 14 23.9	28.6	0.28	970970
8.5	.9743425	3469	.1779682	9499	.0772232	2096	348 44 21.0	25.6	0.32	971541
9.0	.9761244	1286	.1701989	1807	.0738517	8384	349 14 17.6	22.2	0.36	972116
9.5	.9778330	8369	.1624170	3989	.0704748	4618	349 44 13.7	18.2	0.39	972694
10.0	.9794681	4718	.1546232	6052	.0670927	0800	350 14 9.2	13.7	0.42	973274
10.5	.9810297	0332	.1468180	8001	.0637057	6933	350 44 4.2	8.6	0.43	973858
11.0	.9825177	5210	.1390020	:9842	.0603141	3020	351 13 58.6	63.0	0.44	974445
11.5	.9839320	9350	.1311757	1580	.0569181	9063	351 43 52.5	56.8	0.44	975035
12.0	.9852727	2755	.1233397	3221	.0535179	5064	352 13 45.9	50.2	0.43	975628
12.5	.9865396	5422	.1154945	4770	.0501138	1026	352 43 38.8	43.0	0.42	976224
13.0	.9877327	7351	.1076408	6235	.0467059	6950	353 13 31.2	35.4	0.40	976823
13.5	.9888519	8541	.0997790	7618	.0432946	2840	353 43 23.2	27.3	0.37	977426
14.0	.9898973	8993	.0919097	8926	.0398801	8698	354 13 14.6	18.7	0.34	978032
14.5	.9908687	8705	.0840334	0164	.0364626	4526	354 43 5.5	9.5	0.30	978640
15.0	.9917660	7676	.0761507	1339	.0330424	0327	355 12 55.9	59.9	0.26	979251
15.5	.9925893	5907	.0682621	2454	.0296197	6103	355 42 45.9	49.8	0.20	979865
16.0	.9933386	3398	.0603683	3517	.0261947	1856	356 12 35.4	39.3	0.14	980482
16.5	.9940137	0147	.0524698	4533	.0227676	7588	356 42 24.4	28.2	0.08	981101
17.0	.9946146	6155	.0445670	5507	.0193387	3303	357 12 13.0	16.8	+0.02	981723
17.5	.9951413	1420	.0366606	6444	.0159083	9002	357 42 1.2	4.9	−0.05	982347
18.0	.9955938	5943	.0287512	7351	.0124765	4687	358 11 49.0	52.7	0.12	982972
18.5	.9959719	9723	.0208394	8234	.0090437	0362	358 41 36.2	39.8	0.19	983600
19.0	.9962757	2760	.0129258	9100	.0056101	6029	359 11 22.9	26.3	0.25	984230
19.5	.9965051	5052	−.0050108	:9951	−.0021760	1691	359 41 9.3	12.8	0.32	984860
20.0	.9966602	6601	+.0029049	9204	+.0012586	2652	0 10 55.3	58.8	0.38	985492
20.5	.9967408	7406	.0108208	8362	.0046933	6996	0 40 40.8	44.2	0.44	986126
21.0	.9967469	7466	.0187363	7515	.0081277	1336	1 10 25.8	29.2	0.49	986761
21.5	.9966786	6783	.0266507	6658	.0115616	5672	1 40 10.4	13.7	0.54	987395
22.0	.9965359	5354	.0345635	5785	.0149949	:0002	2 9 54.6	57.9	0.59	988030
22.5	.9963187	3181	.0424739	4888	.0184273	4323	2 39 38.3	41.5	0.63	988666
23.0	.9960270	0262	.0503814	3961	.0218584	8631	3 9 21.5	24.7	0.66	989303
23.5	.9956609	6600	.0582855	3001	.0252880	2924	3 39 4.3	7.4	0.69	989939
24.0	.9952204	2194	.0661856	2000	.0287160	7201	4 8 46.7	49.8	0.71	990574
24.5	.9947054	7043	.0740811	0954	.0321420	1458	4 38 28.7	31.7	0.72	991209
25.0	.9941161	1148	.0819713	9854	.0355657	5691	5 8 10.1	13.1	0.72	991844
25.5	.9934525	4511	.0898555	8695	.0389869	9900	5 37 51.0	53.9	0.71	992478
26.0	.9927147	7132	.0977332	7470	.0424053	4081	6 7 31.5	34.4	0.69	993111
26.5	.9919027	9011	.1056037	6174	.0458207	8232	6 37 11.6	14.4	0.67	993743
27.0	.9910166	0149	.1134665	4800	.0492326	2348	7 6 51.2	54.0	0.65	994374
27.5	.9900565	0547	1213208	3342	.0526410	6429	7 36 30.2	32.9	0.61	995002
28.0	.9890224	0205	.1291661	1793	.0560455	0471	8 6 8.7	11.4	0.57	995630
28.5	.9879145	9125	.1370018	0149	.0594458	4471	8 35 46.7	49.3	0.53	996257
29.0	.9867329	7309	.1448271	8400	.0628417	8426	9 5 24.2	26.8	0.48	996883
29.5	.9854778	4758	.1526415	6543	.0662329	2335	9 35 1.1	3.6	0.42	997507
30.0	.9841493	1472	.1604444	4570	.0696191	6194	10 4 37.5	40.0	0.36	998130
30.5	.9827475	7453	.1682352	2477	.0730000	0000	10 34 13.4	15.8	0.30	998751
31.0	.9812726	2704	.1760133	0256	.0763754	3751	11 3 48.7	51.0	0.24	999370
31.5	.9797248	7225	.1837781	7903	.0797450	7444	11 33 23.4	25.6	0.17	999988
Apr. 1.0	.9781044	1621	.1915289	5409	.0831087	1078	12 2 57.6	59.8	0.11	◆000605
1.5	.9764114	4091	.1992652	2771	.0864661	4649	12 32 31.2	33.3	−0.04	001221
2.0	+.9746460	6437	+.2069865	9982	+.0898169	8153	13 2 4.3	6.4	+0.02	001835

◆ The first figures of this and the following logarithms are 0.0.

SUN'S COÖRDINATES, 1873.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ. 0.0
Apr. 2.5	+.9728086	8063	+.2146021	7037	+.0931609	1589	13° 31′ 36″.8	38″.8	+0″.09	002449
3.0	.9708992	8968	.2223815	3929	.0964979	4956	14 1 8.8	10.8	0.15	003061
3.5	.9689181	9157	.2300542	0655	.0998276	8250	14 30 40.2	42.1	0.20	003673
4.0	.9668655	8631	.2377096	7207	.1031497	1468	15 0 11.0	12.9	0.25	004284
4.5	.9647416	7392	.2453471	3580	.1064640	4607	15 29 41.1	42.9	0.30	004895
5.0	.9625467	5443	.2529661	9768	.1097704	7668	15 59 10.6	12.4	0.34	005505
5.5	.9602810	2786	.2605661	5767	1130685	0646	16 28 39.6	41.3	0.37	006114
6.0	.9579448	9424	.2681466	1570	.1163580	3538	16 58 8.0	9.7	0.40	006722
6.5	.9555383	5359	.2757071	7173	.1196388	6343	17 27 35.8	37.4	0.42	007331
7.0	.9530618	0594	.2832471	2571	.1229107	9059	17 57 3.1	4.7	0.44	007940
7.5	.9505155	5132	.2907660	7759	.1261734	1683	18 26 29.8	31.3	0.44	008549
8.0	.9478997	8974	.2982633	2730	.1294266	4212	18 55 56.0	57.5	0.44	009158
8.5	.9452146	2123	.3057386	7481	.1326701	6643	19 25 21.6	23.0	0.42	009768
9.0	.9424603	4581	.3131914	2007	.1359039	8978	19 54 46.7	48.1	0.40	010378
9.5	.9396372	6350	.3206211	6302	.1391277	1213	20 24 11.2	12.5	0.37	010988
10.0	.9367455	7434	.3280271	0361	.1423412	3345	20 53 35.1	36.3	0.34	011598
10.5	.9337855	7835	.3354092	4180	.1455442	5372	21 22 58.6	59.7	0.30	012209
11.0	.9307574	7555	.3427668	7754	.1487365	7292	21 52 21.6	22.7	0.25	012821
11.5	.9276615	6596	.3500993	1078	.1519181	9105	22 21 44.1	45.1	0.20	013432
12.0	.9244979	4961	.3574062	4145	.1550885	0806	22 51 6.0	7.0	0.15	014043
12.5	.9212670	2652	.3646871	6952	.1582476	2393	23 20 27.5	28.4	0.09	014654
13.0	.9179690	9673	.3719415	9494	.1613952	3866	23 49 48.5	49.4	+0.03	015266
13.5	.9146040	6024	.3791689	1767	.1645310	5221	24 19 9.0	9.8	—0.03	015879
14.0	.9111723	1708	.3863687	3763	.1676549	6457	24 48 29.0	29.8	0.10	016492
14.5	.9076743	6729	.3935406	5480	.1707666	7571	25 17 48.5	49.2	0.16	017104
15.0	.9041101	1088	.4006840	6912	.1738660	8562	25 47 7.6	8.2	0.23	017716
15.5	.9004800	4788	.4077984	8055	.1769528	9427	26 16 26.2	26.7	0.29	018328
16.0	.8967843	7832	.4148834	8903	.1800268	0164	26 45 44.4	44.9	0.36	018939
16.5	.8930231	0221	.4219385	9452	.1830878	0771	27 15 2.2	2.6	0.42	019549
17.0	.8891968	1959	.4289632	9607	.1861357	1247	27 44 19.6	20.0	0.48	020159
17.5	.8853056	3048	.4359570	9634	.1891702	1589	28 13 36.6	36.9	0.53	020768
18.0	.8813498	3492	.4429194	9256	.1921910	1794	28 42 53.1	53.4	0.58	021375
18.5	.8773296	3291	.4498499	8559	.1951980	1861	29 12 9.3	9.5	0.63	021981
19.0	.8732454	2451	.4567479	7537	.1981910	1788	29 41 25.1	25.3	0.67	022586
19.5	.8690973	0971	.4636130	6187	.2011698	1573	30 10 40.4	40.5	0.70	023190
20.0	.8648857	8857	.4704447	4502	.2041341	1214	30 39 55.3	55.3	0.72	023791
20.5	.8606108	6110	.4772424	2478	.2070837	0707	31 9 9.8	9.8	0.73	024390
21.0	.8562732	2736	.4840056	0108	.2100184	0051	31 38 23.9	23.8	0.74	024986
21.5	.8518731	8735	.4907337	7388	.2129380	9244	32 7 37.6	37.5	0.74	025580
22.0	.8474106	4112	.4974263	4312	.2158421	8283	32 36 51.0	50.8	0.73	026172
22.5	.8428861	8869	.5040829	0877	.2187307	7166	33 6 3.9	3.7	0.71	026760
23.0	.8383000	3010	.5107030	7075	.2216034	5891	33 35 16.4	16.1	0.68	027345
23.5	.8336527	6539	.5172860	2904	.2244601	4455	34 4 28.5	28.2	0.65	027928
24.0	.8289446	9460	.5238315	8357	.2273005	2857	34 33 40.1	39.7	0.62	028507
24.5	.8241759	1775	.5303389	3430	.2301244	1093	35 2 51.3	50.8	0.58	029082
25.0	.8193471	3489	.5368078	8117	.2329316	9163	35 32 2.1	1.5	0.53	029653
25.5	.8144585	4605	.5432376	2414	.2357219	7063	36 1 12.4	11.8	0.48	030221
26.0	.8095106	5128	.5496279	6315	.2384950	4792	36 30 22.3	21.6	0.42	030785
26.5	.8045037	5061	.5559782	9817	.2412508	2347	36 59 31.7	31.0	0.36	031344
27.0	.7994381	4408	.5622880	2913	.2439891	9728	37 28 40.7	39.9	0.29	031900
27.5	.7943143	3172	.5685569	5601	.2467097	6931	37 57 49.3	48.5	0.23	032452
28.0	.7891325	1359	.5747843	7873	.2494122	3954	38 26 57.4	56.5	0.16	033001
28.5	.7838937	8971	.5809699	9728	.2520966	0795	38 56 5.0	4.0	0.10	033545
29.0	.7785979	6016	.5871132	1159	.2547627	7454	39 25 12.2	11.1	—0.03	034085
29.5	.7732457	2496	.5932138	2164	.2574103	3927	39 54 19.0	17.8	+0.03	034621
30.0	.7678375	8417	.5992711	2735	.2600390	0212	40 23 25.3	24.0	0.10	035153
30.5	.7623737	3781	.6052848	2871	.2626488	6307	40 52 31.0	29.7	0.16	035682
May 1.0	.7568549	8596	.6112545	2566	.2652395	2212	41 21 36.3	34.9	0.22	036202
1.5	.7512815	2865	.6171797	1817	.2678109	7924	41 50 41.2	39.8	0.27	036728
2.0	.7456539	6592	.6230601	0619	.2703628	3441	42 19 45.6	44.1	0.31	037245
2.5	+.7399727	9783	+.6288952	8969	+.2728950	8760	42 48 49.4	47.9	+0.34	037759

NOTE.—: denotes a change in the preceding figure.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ⊙'s True Longitude.	λ′	β = ⊙'s Latitude.	Log. Rad. Vect. = ρ. 0.0
May 3.0	+.7342383	2442	+.6346847	6862	+.2754073	3881	43° 17′ 52″.8	51″.2	+0″.37	038270
3.5	.7284512	4574	.6404281	4295	.2778996	8802	43 46 55.6	53.9	0.39	038777
4.0	.7226120	6185	.6461250	1263	.2803716	3520	44 15 57.9	56.1	0.41	039281
4.5	.7167211	7279	.6517751	7763	.2828233	8035	44 44 59.7	57.8	0.41	039783
5.0	.7107789	7860	.6573781	3791	.2852545	2345	45 13 61.1	59.1	0.41	040282
5.5	.7047859	7933	.6629336	9345	.2876651	6449	45 43 2.0	0.0	0.40	040778
6.0	.6987426	7504	.6684412	4420	.2900549	0345	46 12 2.4	0.3	0.39	041272
6.5	.6926495	6576	.6739007	9014	.2924237	4031	46 41 2.3	0.2	0.37	041763
7.0	.6865070	5154	.6793118	3124	.2947715	7507	47 9 61.8	59.6	0.34	042252
7.5	.6803157	3244	.6846741	6746	.2970981	0771	47 38 60.8	58.5	0.30	042738
8.0	.6740759	0850	.6899871	9875	.2994032	3820	48 7 59.4	57.0	0.26	043222
8.5	.6677882	7976	.6952507	2510	.3016869	6655	48 36 57.6	55.1	0.21	043705
9.0	.6614530	4628	.7004646	4648	.3039489	9273	49 5 55.4	52.8	0.16	044185
9.5	.6550706	0807	.7056283	6284	.3061893	1675	49 34 52.7	50.0	0.10	044663
10.0	.6486416	6521	.7107415	7415	.3084078	3859	50 3 49.5	46.7	+0.04	045139
10.5	.6421664	1772	.7158040	8040	.3106042	5821	50 32 46.0	43.2	−0.02	045613
11.0	.6356454	6566	.7208155	8154	.3127784	7561	51 1 42.1	39.2	0.09	046085
11.5	.6290791	0906	.7257755	7753	.3149304	9079	51 30 37.8	34.9	0.16	046556
12.0	.6224679	4798	.7306838	6835	.3170599	0373	51 59 33.1	30.1	0.23	047025
12.5	.6158124	8247	.7355401	5398	.3191668	1440	52 28 28.1	25.1	0.30	047491
13.0	.6091129	1256	.7403442	3438	.3212511	2281	52 57 22.7	19.5	0.36	047955
13.5	.6023699	3830	.7450956	0951	.3233125	2894	53 26 16.9	13.6	0.42	048417
14.0	.5955840	5975	.7497940	7934	.3253510	3278	53 55 10.9	7.5	0.48	048877
14.5	.5887555	7694	.7544391	4385	.3273663	3429	54 24 4.6	1.1	0.54	049334
15.0	.5818849	8992	.7590307	0300	.3293584	3349	54 52 57.9	54.3	0.59	049789
15.5	.5749726	9873	.7635685	5678	.3313271	3034	55 21 50.9	47.3	0.63	050242
16.0	.5680190	0341	.7680521	0513	.3332723	2485	55 50 43.7	40.0	0.67	050692
16.5	.5610247	0402	.7724811	4803	.3351939	1700	56 19 36.2	32.5	0.70	051138
17.0	.5539901	:0060	.7768553	8544	.3370918	0678	56 48 28.4	24.6	0.72	051582
17.5	.5469157	9320	.7811743	1734	.3389658	9417	57 17 20.2	16.3	0.73	052023
18.0	.5398019	8187	.7854378	4368	.3408157	7915	57 46 11.7	7.7	0.74	052461
18.5	.5326494	6666	.7896453	6443	.3426414	6171	58 14 63.0	58.9	0.74	052894
19.0	.5254586	4763	.7937967	7956	.3444428	4184	58 43 54.1	49.9	0.73	053324
19.5	.5182300	2481	.7978917	8906	.3462197	1952	59 12 44.9	40.6	0.72	053750
20.0	.5109641	9827	.8019299	9287	.3479721	9475	59 41 35.5	31.1	0.70	054171
20.5	.5036613	6803	.8059110	9098	.3496997	6750	60 10 25.9	21.5	0.67	054586
21.0	.4963222	3417	.8098347	8335	.3514025	3777	60 39 16.0	11.4	0.63	054997
21.5	.4889473	9672	.8137007	6996	.3530803	0554	61 8 5.8	1.1	0.59	055405
22.0	.4815371	5575	.8175087	5076	.3547330	7080	61 36 55.3	50.5	0.55	055808
22.5	.4740923	1131	.8212584	2573	.3563604	3353	62 5 44.6	39.7	0.50	056205
23.0	.4666134	6347	.8249496	9485	.3579625	9373	62 34 33.6	28.6	0.44	056597
23.5	.4591008	1226	.8285819	5809	.3595390	5137	63 3 22.4	17.3	0.38	056984
24.0	.4515552	5775	8321551	1541	.3610897	0643	63 32 10.9	5.7	0.32	057367
24.5	.4439772	9999	.8356689	6679	.3626147	5892	64 0 59.1	53.9	0.25	057743
25.0	.4363674	3906	.8391230	1221	.3641139	0884	64 29 47.0	41.8	0.18	058113
25.5	.4287263	7500	.8425172	5163	.3655870	5614	64 58 34.7	29.4	0.11	058478
26.0	.4210546	0788	.8458511	8503	.3670339	0083	65 27 22.2	16.9	−0.05	058837
26.5	.4133528	3775	.8491246	1238	.3684547	4291	65 56 9.3	3.9	+0.01	059190
27.0	.4056216	6468	.8523375	3368	.3698493	8236	66 24 56.1	50.6	0.07	059538
27.5	.3978617	8874	.8554895	4888	.3712173	1915	66 53 42.6	37.0	0.13	059880
28.0	.3900735	0997	.8585803	5797	.3725586	5328	67 22 28.8	23.1	0.19	060215
28.5	.3822575	2842	.8616099	6093	.3738734	8475	67 51 14.8	9.0	0.24	060545
29.0	.3744144	4416	.8645780	5775	.3751615	1356	68 19 60.5	54.6	0.28	060870
29.5	.3665449	5726	.8674844	4840	.3764228	3969	68 48 45.9	39.9	0.32	061189
30.0	.3586495	6777	.8703289	3286	.3776572	6313	69 17 31.0	24.9	0.35	061501
30.5	.3507287	7574	.8731113	1111	.3788646	8387	69 46 15.7	9.6	0.37	061808
31.0	.3427831	8125	.8758316	8315	.3800451	0192	70 14 60.1	53.9	0.39	062111
31.5	.3348138	8435	.8784896	4896	.3811985	1726	70 43 44.3	38.0	0.40	062408
June 1.0	.3268208	8510	.8810850	0852	.3823247	2987	71 12 28.2	21.8	0.40	062700
1.5	.3188051	8358	.8836177	6180	.3834236	3976	71 41 11.7	5.2	0.39	062987
2.0	+.3107672	7984	+.8860877	0881	+.3844953	4693	72 9 54.9	48.3	+0.37	063269

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d 0.

Date. 1873.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ. 0.0
June 2.5	+.3027076	7393	+.8884948	4953	+.3855397	5137	72° 38′ 37″.8	31″.1	+0″.35	063546
3.0	.2946270	6592	.8908389	8396	.3865567	5307	73 7 20.4	13.6	0.33	063818
3.5	.2865260	5587	.8931199	1207	.3875463	5203	73 35 62.7	55.8	0.30	064087
4.0	.2784051	4384	.8953377	3387	.3885085	4825	74 4 44.7	37.7	0.26	064352
4.5	.2702651	2988	.8974921	4932	.3894432	4172	74 33 26.4	19.3	0.22	064612
5.0	.2621062	1405	.8995831	5844	.3903502	3242	75 2 7.8	0.6	0.17	064867
5.5	.2539291	9639	.9016106	6120	.3912297	2037	75 30 49.0	41.7	0.11	065119
6.0	.2457345	7698	.9035745	5761	.3920817	0557	75 59 29.9	22.5	+0.05	065368
6.5	.2375228	5586	.9054747	4765	.3929060	8800	76 28 10.5	3.0	—0.01	065612
7.0	.2292946	3309	.9073111	3131	.3937026	6767	76 56 51.0	43.4	0.08	065853
7.5	.2210504	0872	.9090837	0859	.3944715	4456	77 25 31.3	23.6	0.14	066091
8.0	.2127909	8282	.9107923	7947	.3952126	1867	77 54 11.3	3.5	0.21	066326
8.5	.2045165	5543	.9124369	4395	.3959259	9000	78 22 51.0	43.1	0.27	066557
9.0	.1962277	2661	.9140173	0202	.3966113	5855	78 51 30.5	22.5	0.34	066785
9.5	.1879252	9641	.9155335	5366	.3972689	2431	79 20 9.9	1.9	0.40	067009
10.0	.1796096	6490	.9169854	9887	.3978986	8729	79 48 49.1	41.0	0.46	067230
10.5	.1712813	3212	.9183729	3764	.3985003	4746	80 17 28.1	19.9	0.52	067448
11.0	.1629409	9813	.9196958	6996	.3990740	0484	80 45 67.0	58.7	0.57	067662
11.5	.1545890	6299	.9209541	9581	.3996198	5942	81 14 45.7	37.3	0.62	067873
12.0	.1462262	2676	.9221478	1521	.4001376	1121	81 43 24.3	15.8	0.66	068081
12.5	.1378529	8948	.9232768	2814	.4006272	6018	82 11 62.7	54.1	0.69	068285
13.0	.1294697	5121	.9243410	3459	.4010887	0634	82 40 41.1	32.4	0.72	068485
13.5	.1210771	1200	.9253402	3454	.4015222	4970	83 9 19.4	10.6	0.74	068681
14.0	.1126758	7192	.9262744	2799	.4019275	9024	83 37 57.5	48.6	0.75	068874
14.5	.1042663	3102	.9271435	1493	.4023046	2796	84 6 35.5	26.6	0.76	069064
15.0	.0958491	8935	.9279475	9536	.4026534	6285	84 35 13.4	4.3	0.76	069249
15.5	.0874248	4697	.9286862	6926	.4029740	9492	85 3 51.3	42.2	0.75	069429
16.0	.0789940	:0394	.9293596	3663	.4032663	2416	85 32 29.2	20.0	0.73	069605
16.5	.0705572	6031	.9299676	9746	.4035302	5056	86 0 67.0	57.7	0.70	069777
17.0	.0621150	1614	.9305101	5175	.4037657	7413	86 29 44.7	35.3	0.67	069944
17.5	.0536680	7149	.9309870	9047	.4039728	9486	86 58 22.4	12.9	0.63	070105
18.0	.0452169	2643	.9313983	4064	.4041515	1274	87 26 60.0	50.4	0.59	070262
18.5	.0367622	8101	.9317439	7523	.4043017	2777	87 55 37.5	27.8	0.54	070414
19.0	.0283045	3529	.9320237	0325	.4044232	3994	88 24 15.1	5.3	0.49	070560
19.5	.0198445	8934	.9322376	2468	.4045164	4927	88 52 52.6	42.7	0.43	070700
20.0	.0113828	4322	.9323857	3953	.4045811	5576	89 21 30.1	20.2	0.37	070835
20.5	+.0029199	9698	.9324679	4779	.4046171	5937	89 49 67.5	57.5	0.31	070964
21.0	—.0055436	4933	.9324841	4945	.4046244	6912	90 18 44.9	34.8	0.24	071087
21.5	.0140070	9562	.9324343	4451	.4046032	5891	90 47 22.2	12.0	0.18	071203
22.0	.0224697	4185	.9323186	3298	.4045534	5305	91 15 59.4	49.2	0.11	071313
22.5	.0309309	8792	.9321369	1485	.4044750	4522	91 44 36.8	26.4	—0.04	071418
23.0	.0393901	3380	.9318892	9012	.4043680	3453	92 13 14.1	3.6	+0.03	071516
23.5	.0478466	7940	.9315755	5879	.4042323	2099	92 41 51.3	40.7	0.09	071607
24.0	.0562999	2469	.9311958	2087	.4040679	0457	93 10 28.4	17.7	0.15	071692
24.5	.0647493	6958	.9307500	7633	.4038748	8528	93 38 65.5	54.7	0.20	071770
25.0	.0731940	1401	.9302383	2521	.4036530	6312	94 7 42.5	31.6	0.25	071840
25.5	.0816335	5791	.9296699	6751	.4034026	3810	94 36 19.5	8.5	0.29	071904
26.0	.0900671	0123	.9290177	0324	.4031236	1022	95 4 56.4	45.3	0.33	071962
26.5	.0984942	4390	.9283087	3240	.4028169	7948	95 33 33.2	22.0	0.35	072013
27.0	.1069141	8585	.9275341	5498	.4024891	4591	96 1 69.9	58.6	0.37	072058
27.5	.1153262	2702	.9266939	7100	.4021156	0948	96 30 46.5	35.1	0.38	072096
28.0	.1237299	6735	.9257882	8048	.4017226	7020	96 59 23.1	11.6	0.39	072128
28.5	.1321246	0678	.9248171	8342	.4013012	2808	97 27 59.6	48.0	0.39	072154
29.0	.1405095	4523	.9237808	7984	.4008514	8312	97 56 36.0	24.3	0.39	072175
29.5	.1488842	8266	.9226793	6974	.4003734	3534	98 25 12.3	0.6	0.36	072189
30.0	.1572481	1931	.9215127	5313	.3998671	8473	98 53 48.6	36.8	0.33	072197
30.5	.1656007	5423	.9202811	3002	.3993325	3129	99 22 24.8	12.9	0.30	072199
July 1.0	.1739413	8826	.9189846	:0042	.3987698	7504	99 50 60.9	48.9	0.26	072196
1.5	.1822692	2101	.9176235	6436	.3981791	1599	100 19 37.0	24.9	0.22	072189
2.0	.1905840	5246	.9161979	2185	.3975603	5413	100 48 13.1	0.9	0.17	072175
2.5	—.1988850	8252	+.9147079	7290	+.3969135	8947	101 16 49.0	36.7	+0.12	072155

NOTE.—: denotes a change in the preceding figure.

SUN'S COÖRDINATES, 1873.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
July 3.0	−.2071716	1115	+.9131536	1753	+.3962388	2203	101° 45′ 24″.8	12″.4	+0″.06	0.0 072130
3.5	.2154433	3828	.9115351	5573	.3955364	5181	102 13 60.6	48.1	0.00	072102
4.0	.2236995	6387	.9098528	8756	.3948061	7881	102 42 36.3	23.7	−0.06	072069
4.5	.2319396	8785	.9081067	1301	.3940480	0302	103 10 72.0	59.3	0.12	072031
5.0	.2401631	1017	.9062969	3208	.3932623	2448	103 39 47.7	34.9	0.19	071988
5.5	.2483694	3077	.9044236	4480	.3924490	4318	104 8 23.4	10.5	0.25	071941
6.0	.2565581	4961	.9024869	5119	.3916083	5913	104 36 59.0	46.0	0.32	071891
6.5	.2647286	6653	.9004870	5126	.3907402	7234	105 5 34.6	21.5	0.38	071837
7.0	.2728802	8176	.8984240	4502	.3898448	8283	105 33 70.2	57.0	0.44	071779
7.5	.2810125	:9496	.8962981	3249	.3889221	9059	106 2 45.8	32.5	0.50	071718
8.0	.2891250	0618	.8941095	1369	.3879722	9563	106 31 21.5	8.1	0.56	071653
8.5	.2972171	1536	.8918582	8862	.3869951	9795	106 59 57.1	43.6	0.61	071584
9.0	.3052883	2246	.8895445	5731	.3859910	9757	107 28 32.8	19.2	0.65	071510
9.5	.3133380	2740	.8871686	1978	.3849599	9449	107 56 68.5	54.8	0.68	071433
10.0	.3213658	3016	.8847306	7604	.3839019	8872	108 25 44.3	30.5	0.71	071354
10.5	.3293712	3067	.8822306	2610	.3828170	8026	108 54 20.2	6.3	0.73	071271
11.0	.3373537	2890	.8796687	6997	.3817053	6912	109 22 56.2	42.2	0.74	071184
11.5	.3453126	2477	.8770452	0768	.3805669	5531	109 51 32.3	18.2	0.74	071092
12.0	.3532475	1824	.8743602	3924	.3794018	3883	110 19 68.5	54.3	0.74	070997
12.5	.3611579	0926	.8716138	6466	.3782102	1970	110 48 44.8	30.5	0.73	070899
13.0	.3690432	:9777	.8688062	8397	.3769921	9793	111 17 21.2	6.8	0.72	070797
13.5	.3769028	8371	.8659376	9717	.3757475	7350	111 45 57.7	43.2	0.69	070690
14.0	.3847363	6704	.8630080	0427	.3744765	4643	112 14 34.4	19.9	0.66	070579
14.5	.3925432	4771	.8600176	0529	.3731791	1672	112 42 71.3	56.7	0.63	070465
15.0	.4003228	2564	.8569667	:0027	.3718555	8440	113 11 48.4	33.7	0.59	070347
15.5	.4080745	0081	.8538553	8919	.3705057	4945	113 40 25.7	10.9	0.54	070224
16.0	.4157979	7314	.8506837	7210	.3691298	1190	114 8 63.1	48.2	0.48	070096
16.5	.4234924	4257	.8474520	4899	.3677278	7173	114 37 40.7	25.7	0.42	069964
17.0	.4311573	0905	.8441603	1989	.3662999	2898	115 6 18.5	3.4	0.36	069826
17.5	.4387921	7252	.8408090	8482	.3648461	8363	115 34 56.5	41.4	0.30	069683
18.0	.4463964	3294	.8373982	4381	.3633665	3571	116 3 34.6	19.4	0.23	069535
18.5	.4539695	9024	.8339281	9686	.3618612	8521	116 31 72.9	57.7	0.17	069382
19.0	.4615108	4436	.8303989	4401	.3603302	3213	117 0 51.5	36.2	0.10	069224
19.5	.4690197	:9524	.8268109	8527	.3587737	7653	117 29 30.2	14.8	−0.04	069069
20.0	.4764957	4283	.8231643	2068	.3571917	1837	117 57 69.1	53.6	+0.03	068890
20.5	.4839383	8708	.8194593	5024	.3555843	5766	118 26 48.2	32.6	0.10	068715
21.0	.4913469	2794	.8156960	7398	.3539517	9444	118 55 27.6	11.9	0.16	068533
21.5	.4987208	6533	.8118748	9192	.3522939	2869	119 23 67.1	51.3	0.22	068344
22.0	.5060596	:9920	.8079960	:0411	.3506110	6044	119 52 46.8	30.9	0.27	068150
22.5	.5133627	2951	.8040598	1056	.3489032	8970	120 21 26.8	10.8	0.31	067950
23.0	.5206295	5619	.8000664	1129	.3471706	1648	120 49 67.0	50.9	0.35	067744
23.5	.5278594	7918	.7960162	0633	.3454133	4078	121 18 47.3	31.2	0.38	067530
24.0	.5350519	:9843	.7919094	9572	.3436314	6263	121 47 27.8	11.6	0.40	067310
24.5	.5422063	1387	.7877462	7947	.3418251	8204	122 15 68.5	52.2	0.42	067085
25.0	.5493221	2545	.7835270	5762	.3399945	9902	122 44 49.3	32.9	0.43	066853
25.5	.5563988	3312	.7792523	3022	.3381398	1359	123 13 30.3	13.8	0.43	066614
26.0	.5634360	3685	.7749223	9729	.3362610	2575	123 41 71.5	54.9	0.42	066369
26.5	.5704330	3655	.7705374	5887	.3343582	3551	124 10 52.9	36.2	0.41	066119
27.0	.5773893	3219	.7660978	1498	.3324317	4290	124 39 34.4	17.6	0.39	065862
27.5	.5843044	2370	.7616040	6567	.3304816	4793	125 7 76.0	59.2	0.36	065599
28.0	.5911778	1105	.7570562	1096	.3285080	5061	125 36 57.8	40.9	0.33	065330
28.5	.5980090	:9418	.7524549	5090	.3265112	5097	126 5 39.8	22.9	0.29	065056
29.0	.6047975	7304	.7478004	8552	.3244914	4903	126 34 21.9	4.9	0.25	064776
29.5	.6115427	4757	.7430931	1486	.3224485	4478	127 2 64.2	47.1	0.20	064491
30.0	.6182442	1773	.7383333	3895	.3203828	3825	127 31 46.7	29.5	0.14	064201
30.5	.6249016	8348	.7335214	5783	.3182945	2946	128 0 29.3	12.0	0.08	063906
31.0	.6315143	4477	.7286578	7154	.3161838	1843	128 28 72.0	54.6	+0.02	063606
31.5	.6380819	0154	.7237428	8011	.3140507	0516	128 57 54.9	37.4	−0.05	063301
Aug. 1.0	.6446041	5378	.7187768	8357	.3118955	8968	129 26 37.9	20.3	0.11	062992
1.5	.6510803	0142	.7137601	8197	.3097183	7200	129 55 21.1	3.5	0.18	062678
2.0	−.6575100	4441	+.7086932	7535	+.3075193	5215	130 23 64.5	46.8	−0.24	062359

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

Date. 1873.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
Aug. 2.5	−.6638929	8272	+.7035763	6373	+.3052987	3013	130 52 48.1	30.4	−0.30	062037
3.0	.6702287	1632	.6984098	4714	.3030566	0596	131 21 31.8	14.0	0.36	061712
3.5	.6765169	4516	.6931942	2565	.3007932	7966	131 49 75.7	57.8	0.42	061382
4.0	.6827570	6919	.6879297	9927	.2985087	5126	132 18 59.8	41.8	0.47	061048
4.5	.6889487	8838	.6826169	6806	.2962031	2074	132 47 44.2	26.1	0.52	060711
5.0	.6950916	0270	.6772560	3203	.2938767	8814	133 16 28.8	10.6	0.57	060373
5.5	.7011854	1210	.6718475	9125	.2915296	5347	133 44 73.6	55.3	0.61	060031
6.0	.7072296	1655	.6663917	4574	.2891620	1676	134 13 58.6	40.2	0.64	059685
6.5	.7132236	1597	.6608890	9554	.2867741	7801	134 42 43.9	25.5	0.66	059337
7.0	.7191672	1036	.6553396	4066	.2843659	3724	135 11 29.4	10.9	0.68	058986
7.5	.7250601	:9968	.6497439	8116	.2819378	9447	135 39 75.2	56.7	0.69	058632
8.0	.7309017	8387	.6441024	1707	.2794899	4973	136 8 61.2	42.7	0.69	058274
8.5	.7366916	6289	.6384154	4844	.2770222	0300	136 37 47.6	29.0	0.68	057914
9.0	.7424295	3671	.6326831	7527	.2745349	5432	137 6 34.2	15.5	0.67	057552
9.5	.7481148	0527	.6269060	9763	.2720282	0369	137 35 21.1	2.3	0.65	057187
10.0	.7537472	6855	.6210846	1555	.2695023	5115	138 3 68.4	49.5	0.62	056819
10.5	.7593265	2651	.6152190	2906	.2669573	9669	138 32 56.1	37.2	0.58	056449
11.0	.7648521	7911	.6093096	3818	.2643933	4034	139 1 44.1	25.1	0.54	056076
11.5	.7703237	2631	.6033568	4297	.2618105	8210	139 30 32.3	13.3	0.50	055700
12.0	.7757408	6806	.5973611	4346	.2592091	2201	139 59 20.9	1.9	0.45	055320
12.5	.7811031	0433	.5913227	3967	.2565892	6006	140 27 69.9	50.8	0.39	054937
13.0	.7864102	3508	.5852420	3168	.2539510	9629	140 56 59.3	40.1	0.33	054551
13.5	.7916617	6027	.5791194	1948	.2512946	3069	141 25 49.0	29.7	0.27	054162
14.0	.7968570	7984	.5729554	:0314	.2486203	6331	141 54 39.1	19.7	0.21	053770
14.5	.8019959	9377	.5667504	8271	.2459282	9414	142 23 29.7	10.2	0.15	053373
15.0	.8070780	0202	.5605047	5820	.2432184	2321	142 52 20.7	1.1	0.08	052973
15.5	.8121028	0454	.5542187	2966	.2404911	5052	143 20 72.1	52.5	−0.01	052570
16.0	.8170697	0128	.5478929	9714	.2377465	7609	143 49 63.8	44.1	+0.06	052163
16.5	.8219785	9221	.5415277	6068	.2349848	9998	144 18 56.0	36.3	0.13	051752
17.0	.8268288	7729	.5351236	2033	.2322062	2217	144 47 48.6	28.8	0.19	051337
17.5	.8316202	5648	.5286809	7612	.2294109	4268	145 16 41.5	21.7	0.25	050917
18.0	.8363522	2973	.5222001	2810	.2265990	6154	145 45 34.8	14.9	0.30	050493
18.5	.8410244	:9700	.5156817	7632	.2237707	7875	146 14 28.6	8.6	0.35	050063
19.0	.8456365	5826	.5091260	2081	.2209262	9435	146 43 22.8	2.7	0.39	049629
19.5	.8501879	1345	5025335	6162	.2180656	0836	147 11 77.4	57.2	0.42	049191
20.0	.8546783	6255	.4959048	9880	.2151897	2079	147 40 72.4	52.1	0.45	048748
20.5	.8591075	0552	.4892403	3241	.2122979	3165	148 9 67.8	47.6	0.47	048299
21.0	.8634750	4233	.4825405	6248	.2093906	4097	148 38 63.6	43.2	0.48	047846
21.5	.8677805	7293	.4758059	8908	.2064685	4880	149 7 59.8	39.4	0.49	047388
22.0	.8720235	:9729	.4690369	1224	.2035313	5513	149 36 56.4	35.9	0.49	046926
22.5	.8762037	1536	.4622341	3202	.2005794	5998	150 5 53.4	32.9	0.48	046458
23.0	.8803208	2713	.4553979	4845	.1976129	6338	150 34 50 7	30.1	0.46	045985
23.5	.8843744	3255	.4485289	6161	.1946321	6534	151 3 48.4	27.7	0.44	045507
24.0	.8883643	3160	.4416277	7154	.1916374	6592	151 32 46.5	25.7	0.41	045024
24.5	.8922900	2423	.4346958	7831	.1886288	6510	152 1 45.0	24.2	0.37	044536
25.0	.8961513	1042	.4277306	8194	.1856066	6293	152 30 43.8	22.9	0.33	044044
25.5	.8999479	9014	.4207357	8250	.1825714	5943	152 59 43.0	22.1	0.28	043547
26.0	.9036795	6337	.4137107	8005	.1795226	5463	153 28 42.5	21.5	0.23	043045
26.5	.9073458	3006	.4066562	7465	.1764617	4853	153 57 42.3	21.3	0.17	042540
27.0	.9109465	9020	.3995726	6634	.1733871	4117	154 26 42.5	21.4	0.11	042031
27.5	.9144814	4376	.3924604	5517	.1703005	3256	154 55 43.1	22.0	+0.05	041518
28.0	.9179562	9071	.3853203	4120	.1672019	2275	155 24 44.0	22.8	−0.01	041000
28.5	.9213526	3102	.3781528	2450	.1640914	1174	155 53 45.2	23.9	0.07	040479
29.0	.9246885	6468	.3709583	:0510	.1609691	9956	156 22 46.8	25.4	0.14	039955
29.5	.9279576	9166	.3637373	8305	.1578354	8623	156 51 48.7	27.3	0.21	039427
30.0	.9311597	1194	.3564905	5841	.1546905	7180	157 20 51.0	29.5	0.27	038895
30.5	.9342945	2549	.3492184	3125	.1515347	5627	157 49 53.6	32.1	0.33	038361
31.0	.9373619	3230	.3419214	:0159	.1483681	3965	158 18 56.6	35.0	0.38	037825
31.5	.9403617	3235	.3346002	6951	.1451909	2198	158 47 59.9	38.3	0.43	037286
Sept. 1.0	.9432938	2564	.3272553	3506	.1420034	0327	159 16 63.5	41.8	0.48	036742
1.5	−.9461579	1212	+.3198871	9829	+.1388059	8357	159 45 67.5	45.8	−0.52	036200

NOTE.—: denotes a change in the preceding figure.

SUN'S COÖRDINATES, 1873.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Sept. 2.0	−.9489538	9179	+.3124961	5923	+.1355985	6287	160° 14′ 71″.9	50″.1	−0″.56	0.0 035654
2.5	.9516813	6461	.3050829	1795	.1323815	4122	160 43 76.7	54.9	0.59	035106
3.0	.9543402	3058	.2976480	7450	.1291552	1863	161 13 21.8	0.0	0.61	034556
3.5	.9569305	8968	.2901919	2893	.1259197	9513	161 42 27.3	5.4	0.62	034005
4.0	.9594519	4190	.2827152	8130	.1226752	7072	162 11 33.2	11.2	0.63	033454
4.5	.9619042	8721	.2752183	3165	.1194221	4545	162 40 39.5	17.5	0.63	032901
5.0	.9642872	2559	.2677017	8002	.1161606	1934	163 9 46.3	24.2	0.62	032346
5.5	.9666008	5703	.2601659	2648	.1128908	9240	163 38 53.5	31.4	0.60	031790
6.0	.9688448	8151	.2526114	7106	.1096129	6465	164 7 61.1	38.9	0.57	031234
6.5	.9710191	;9902	.2450387	1383	.1063270	3610	164 36 69.1	46.9	0.54	030677
7.0	.9731234	0954	.2374484	5483	.1030336	0681	165 5 77.6	55.3	0.50	030118
7.5	.9751575	1303	.2298410	9413	.0997328	7678	165 35 26.5	4.1	0.45	029559
8.0	.9771214	0950	.2222169	3175	.0964248	4692	166 4 35.9	13.4	0.40	028999
8.5	.9790148	;9892	.2145766	6775	.0931097	1455	166 33 45.8	23.2	0.35	028438
9.0	.9808376	8128	.2069207	;0219	.0897879	8241	167 2 56.2	33.6	0.29	027876
9.5	.9825895	5656	.1992497	3512	.0864596	4962	167 31 67.2	44.5	0.23	027313
10.0	.9842705	2475	.1915641	6659	.0831249	1619	168 0 78.6	55.9	0.16	026749
10.5	.9858804	8583	.1838643	9664	.0797841	8216	168 30 30.5	7.7	0.10	026185
11.0	.9874190	3978	.1761510	2534	.0764374	4753	168 59 42.8	20.0	−0.03	025620
11.5	.9888862	8658	.1684246	5273	.0730851	1234	169 28 55.7	32.8	+0.04	025054
12.0	.9902817	2622	.1606856	7886	.0697273	7660	169 57 69.2	46.3	0.11	024486
12.5	.9916054	5868	.1529345	;0378	.0663642	4033	170 27 23.2	0.3	0.18	023917
13.0	.9928571	8394	.1451721	2756	.0629961	;0356	170 56 37.7	14.7	0.24	023346
13.5	.9940366	0198	.1373987	5023	.0596232	6631	171 25 52.8	29.8	0.30	022774
14.0	.9951439	1280	.1296149	7189	.0562459	2862	171 54 68.5	45.4	0.35	022200
14.5	.9961788	1638	.1218213	9256	.0528642	9049	172 24 24.7	1.6	0.40	021624
15.0	.9971411	1271	.1140184	1229	.0494785	5196	172 53 41.5	18.3	0.45	021046
15.5	.9980306	0175	.1062069	3116	.0460891	1306	173 22 58.8	35.6	0.49	020466
16.0	.9988471	8349	.0983873	4922	.0426961	7380	173 51 76.6	53.3	0.52	019883
16.5	.9995905	5792	.0905602	6653	.0392997	3420	174 21 35.0	11.7	0.54	019298
17.0	1.0002607	2504	.0827261	8314	.0359003	9430	174 50 54.0	30.6	0.56	018711
17.5	1.0008576	8482	.0748858	9913	.0324982	5413	175 19 73.5	50.0	0.57	018120
18.0	1.0013811	3727	.0670398	1455	.0290936	1371	175 49 33.4	9.8	0.58	017527
18.5	1.0018311	8237	.0591886	2945	.0256867	7306	176 18 53.9	30.3	0.57	016932
19.0	1.0022074	2010	.0513329	4389	.0222779	3221	176 47 75.0	51.3	0.55	016335
19.5	1.0025101	5046	.0434733	5795	.0188674	9120	177 17 36.6	12.9	0.53	015735
20.0	1.0027391	7346	.0356104	7167	.0154553	5003	177 46 58.7	34.9	0.50	015132
20.5	1.0028943	8908	.0277449	8514	.0120420	0874	178 15 81.3	57.5	0.47	014526
21.0	1.0029755	9730	.0198773	9839	.0086278	6735	178 45 44.4	20.5	0.43	013917
21.5	1.0029829	9814	.0120083	1150	.0052130	2591	179 14 68.0	44.1	0.38	013305
22.0	1.0029164	9159	+.0041384	2452	+.0017977	8441	179 44 32.1	8.1	0.32	012691
22.5	1.0027759	7764	−.0037318	6249	−.0016177	5709	180 13 56.7	32.7	0.27	012074
23.0	1.0025614	5629	.0116017	4947	.0050330	;9859	180 42 81.8	57.7	0.21	011455
23.5	1.0022730	2755	.0194705	3634	0084479	4004	181 12 47.3	23.2	0.14	010834
24.0	1.0019107	9142	.0273377	2305	.0118621	8143	181 41 73.2	49.0	0.08	010210
24.5	1.0014745	4790	.0352027	0954	.0152754	2272	182 11 39.6	15.4	+0.02	009584
25.0	1.0009643	9699	.0430649	;9575	.0186875	6390	182 40 66.6	42.3	−0.04	008956
25.5	1.0003802	3868	.0509237	8162	.0220989	0491	183 10 34.0	9.7	0.10	008327
26.0	.9997224	7300	.0587784	6709	.0255067	4575	183 39 61.8	37.4	0.17	007696
26.5	.9989908	9994	.0666285	5209	.0289134	8639	184 9 30.1	5.7	0.23	007063
27.0	.9981855	1952	.0744734	3658	.0323178	2680	184 38 58.8	34.3	0.28	006429
27.5	.9973066	3175	.0823125	2948	.0357195	6694	185 8 27.9	3.3	0.34	005794
28.0	.9963542	3660	.0901450	0373	.0391185	0681	185 37 57.4	32.7	0.39	005158
28.5	.9953283	3411	.0979705	8628	.0425144	4636	186 7 27.4	2.7	0.43	004521
29.0	.9942290	2429	.1057884	6807	.0459069	8558	186 36 57.9	33.1	0.47	003883
29.5	.9930565	0714	.1135981	4904	.0492959	2445	187 6 28.8	4.0	0.50	003245
30.0	.9918108	8268	.1213990	2913	.0526812	6295	187 35 69.1	35.2	0.53	002608
30.5	.9904921	5092	.1291906	0829	.0560624	0104	188 5 31.8	6.9	0.54	001971
Oct. 1.0	.9891004	1185	.1369724	8648	.0594392	3869	188 34 64.0	39.0	0.55	001333
1.5	.9876359	6550	.1447439	6363	.0628115	7587	189 4 36.7	11.7	0.53	000697
2.0	−.9860986	1188	−.1525044	3969	−.0661791	1262	189 33 69.8	44.7	−0.51	000061

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Oct. 2.5	—.9844887	5100	—.1602533	1458	—.0695417	4885	190° 3′ 43″.3	18″.2	—0″.50	9.9 999426
3.0	.9828062	8285	.1679901	8827	.0728990	8456	190 32 77.4	52.2	0.49	998791
3.5	.9810514	0747	.1757144	6070	.0762507	1974	191 2 52.0	26.8	0.46	998159
4.0	.9792244	2488	.1834257	3184	.0795967	5427	191 32 27.0	1.7	0.42	997527
4.5	.9773252	3507	.1911233	0161	.0829368	8825	192 1 62.5	37.2	0.38	996896
5.0	.9753538	3804	.1988067	6996	.0862707	2162	192 31 38.4	13.0	0.33	996267
5.5	.9733106	3383	.2064754	3684	.0895981	5433	193 0 74.9	49.5	0.28	995640
6.0	.9711956	2244	.2141289	0220	.0929189	8639	193 30 51.8	26.3	0.23	995014
6.5	.9690089	0388	.2217666	6598	.0962328	1775	194 0 29.2	3.7	0.17	994389
7.0	.9667506	7816	.2293879	2813	.0995394	4839	194 29 67.0	41.4	0.11	993767
7.5	.9644209	4530	.2369923	8858	.1028388	7830	194 59 45.5	19.9	—0.04	993147
8.0	.9620199	0531	.2445794	4731	.1061306	0746	195 28 84.5	58.8	+0.03	992528
8.5	.9595476	5819	.2521485	0423	.1094147	3585	195 58 64.1	38.4	0.10	991911
9.0	.9570041	0395	.2596990	5930	.1126907	6343	196 28 44.2	18.4	0.16	991296
9.5	.9543897	4262	.2672305	1247	.1159585	9018	196 57 84.9	59.1	0.22	990682
10.0	.9517045	7421	.2747425	6369	.1192179	1610	197 27 66.1	40.2	0.28	990069
10.5	.9489485	9872	.2822344	1290	.1224686	4115	197 57 47.9	21.9	0.34	989459
11.0	.9461219	1618	.2897058	6006	.1257103	6530	198 27 30.3	4.3	0.41	988851
11.5	.9432248	2658	.2971559	0509	.1289429	8854	198 56 73.3	47.2	0.46	988243
12.0	.9402573	2994	.3045842	4794	.1321661	1084	199 26 56.8	30.7	0.50	987637
12.5	.9372196	2628	.3119902	8856	.1353795	3217	199 56 40.9	14.8	0.54	987032
13.0	.9341119	1562	.3193733	2689	.1385830	5249	200 25 85.7	59.5	0.58	986428
13.5	.9309344	9798	.3267328	6286	.1417763	7180	200 55 71.0	44.7	0.61	985824
14.0	.9276872	7337	.3340682	;9643	.1449592	9007	201 25 56.8	30.5	0.63	985222
14.5	.9243704	4180	.3413788	2751	.1481314	0727	201 55 43.2	16.9	0.64	984621
15.0	.9209841	;0329	.3486641	5607	.1512928	2340	202 25 30.3	3.9	0.64	984020
15.5	.9175287	5786	.3559235	8203	.1544429	3839	202 54 77.9	51.5	0.63	983418
16.0	.9140044	0554	.3631565	0536	.1575816	5225	203 24 66.0	39.5	0.61	982817
16.5	.9104113	4634	.3703625	2599	.1607086	6493	203 54 54.7	28.1	0.59	982217
17.0	.9067495	8028	.3775409	4386	.1638237	7643	204 24 43.9	17.2	0.57	981617
17.5	.9030194	0738	.3846911	5891	.1669266	8670	204 54 33.7	7.0	0.53	981017
18.0	.8992213	2768	.3918127	7110	.1700171	;9574	205 23 84.0	57.2	0.49	980417
18.5	.8953553	4120	.3989049	8035	.1730949	0350	205 53 74.9	48.1	0.45	979816
19.0	.8914216	4795	.4059672	8662	.1761596	0996	206 23 66.4	39.5	0.40	979215
19.5	.8874205	4795	.4129990	8983	.1792112	1511	206 53 58.4	31.5	0.34	978615
20.0	.8833525	4126	.4199997	8994	.1822494	1892	207 23 50.9	23.9	0.28	978015
20.5	.8792178	2790	.4269688	8688	.1852739	2136	207 53 43.9	16.9	0.22	977415
21.0	.8750166	0790	.4339057	8561	.1882843	2239	208 23 37.4	10.3	0.16	976816
21.5	.8707493	8128	.4408097	7104	.1912805	2200	208 53 31.4	4.2	0.09	976216
22.0	.8664163	4809	.4476804	5815	.1942622	2016	209 22 85.9	58.6	+0.02	975616
22.5	.8620179	0837	.4545172	4187	.1972292	1685	209 52 80.9	53.6	—0.05	975016
23.0	.8575543	6213	.4613195	2214	.2001812	1204	210 22 76.3	48.9	0.11	974417
23.5	.8530259	0940	.4680866	;9889	.2031180	0571	210 52 72.1	44.7	0.17	973819
24.0	.8484331	5023	.4748182	7209	.2060394	;9785	211 22 68.4	40.9	0.23	973221
24.5	.8437762	8465	.4815137	4168	.2089450	8840	211 52 65.2	37.7	0.29	972624
25.0	.8390556	1271	.4881725	0769	.2118347	7737	212 22 62.5	34.9	0.34	972027
25.5	.8342716	3442	.4947940	6979	.2147083	6472	212 52 60.1	32.4	0.39	971434
26.0	.8294247	4984	.5013778	2822	.2175655	5044	213 22 58.1	30.3	0.43	970836
26.5	.8245153	5902	.5079234	8252	.2204061	3449	213 52 56.5	28.6	0.46	970243
27.0	.8195436	6197	.5144302	3355	.2232298	1686	214 22 55.4	27.4	0.49	969652
27.5	.8145101	5873	.5208979	8036	.2260364	;9752	214 52 54.7	26.7	0.51	969064
28.0	.8094154	4937	.5273260	2322	.2288259	7647	215 22 54.4	26.3	0.52	968477
28.5	.8042598	3392	.5337138	6205	.2315978	5366	215 52 54.4	26.3	0.52	967892
29.0	.7990436	1242	.5400610	;9682	.2343519	2906	216 22 54.8	26.6	0.52	967308
29.5	.7937672	8489	.5463672	2749	.2370882	0269	216 52 55.7	27.5	0.50	966728
30.0	.7884311	5139	.5526329	5402	.2398065	7452	217 22 57.0	28.7	0.48	966151
30.5	.7830357	1197	.5588546	7633	.2425064	4451	217 52 58.7	30.3	0.45	965577
31.0	.7775813	6665	.5650347	;9440	.2451878	1265	218 22 60.7	32.2	0.42	965006
31.5	.7720683	1546	.5711720	0818	.2478506	7893	218 52 63.2	34.6	0.38	964438
Nov. 1.0	.7664972	5846	.5772660	1764	.2504947	4334	219 22 66.1	37.4	0.33	963825
1.5	—.7608684	9569	—.5833162	2271	—.2531198	0586	219 52 69.4	40.7	—0.28	963316

NOTE.—; denotes a change in the preceding figure.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ. 9.9
Nov. 2.0	−.7551822	2719	−.5893221	2336	−.2557256	6644	220° 22′ 73″.2	44″.4	−0″.23	962757
2.5	.7494390	5298	.5952833	1953	.2583121	2509	220 52 77.4	48.6	0.17	962205
3.0	.7436393	7312	.6011995	1121	.2608790	8179	221 22 82.0	53.1	0.11	961657
3.5	.7377834	8764	.6070701	;9833	.2634261	3650	221 52 86.9	58.0	−0.04	961113
4.0	.7318718	9660	.6128947	8085	.2659531	8921	222 23 32.2	3.2	+0.02	960573
4.5	.7259049	;0002	.6186729	5873	.2684600	3991	222 53 38.1	9.0	0.09	960037
5.0	7198832	9796	.6244043	3193	.2709466	8858	223 23 44.4	15.2	0.16	959506
5.5	.7138071	9046	.6300884	0040	.2734128	3521	223 53 51.1	21.8	0.23	958979
6.0	.7076769	7756	.6357248	6411	.2758583	7977	224 23 58.2	28.8	0.29	958456
6.5	.7014930	5928	.6413132	2301	.2782831	2226	224 53 65.8	36.4	0.35	957938
7.0	.6952559	3568	.6468531	7707	.2806869	6265	225 23 73.8	44.3	0.41	957425
7.5	.6889659	;0679	.6523441	2623	.2830696	0093	225 53 82.3	52.8	0.46	956916
8.0	.6826233	7265	.6577858	7047	.2854310	3708	226 24 31.3	1.7	0.51	956412
8.5	.6762288	3331	.6631777	0973	.2877702	7101	226 54 40.9	11.2	0.55	955912
9.0	.6697827	8881	.6685195	4398	.2900879	0277	227 24 50.9	21.1	0.59	955416
9.5	.6632852	3917	.6738106	7316	.2923833	3234	227 54 61.4	31.5	0.61	954924
10.0	.6567368	8445	.6790505	;9722	.2946567	5970	228 24 72.5	42.5	0.63	954435
10.5	.6501382	2470	.6842389	1613	.2969081	8485	228 54 84.0	53.9	0.64	953950
11.0	.6434897	5996	.6893754	2985	.2991369	0775	229 25 35.9	5.7	0.65	953469
11.5	.6367917	9027	.6944595	3833	.3013430	2837	229 55 48.4	18.2	0.65	952992
12.0	.6300446	1567	.6994907	4153	.3035262	4671	230 25 61.4	31.1	0.64	952519
12.5	.6232491	3623	.7044687	3940	.3056865	6275	230 55 74.8	44.5	0.62	952050
13.0	.6164056	5199	.7093930	3191	.3078235	7649	231 25 88.6	58.2	0.60	951583
13.5	.6095146	6300	.7142632	1901	.3099369	8783	231 56 42.9	12.4	0.57	951120
14.0	.6025766	6930	.7190788	0065	.3120266	;9682	232 26 57.8	27.2	0.53	950660
14.5	.5955921	7096	.7238394	7679	.3140925	0343	232 56 73.1	42.4	0.48	950202
15.0	.5885616	6802	.7285445	4739	.3161345	0765	233 26 88.8	58.0	0.42	949747
15.5	.5814857	6054	.7331940	1241	.3181523	0945	233 57 45.0	14.1	0.37	949295
16.0	.5743648	4855	.7377871	7180	.3201456	0880	234 27 61.6	30.6	0.32	948846
16.5	.5671995	3213	.7423235	2552	.3221143	0569	234 57 78.7	47.7	0.26	948400
17.0	.5599903	;1132	.7468029	7355	.3240584	0012	235 28 36.2	5.1	0.19	947956
17.5	.5527378	8618	.7512248	1582	.3259776	9206	235 58 54.1	23.0	0.13	947515
18.0	.5454424	5674	.7555887	5230	.3278717	8150	236 28 72.3	41.1	+0.06	947077
18.5	.5381049	2310	.7598945	8296	.3297404	6839	236 58 90.9	59.6	−0.01	946640
19.0	.5307259	8531	.7641417	0777	.3315837	5275	237 29 49.9	18.5	0.07	946205
19.5	.5233058	4340	.7683299	2668	.3334014	3454	237 59 69.3	37.8	0.13	945773
20.0	.5158453	9745	.7724589	3967	.3351934	1377	238 29 89.1	57.5	0.19	945344
20.5	.5083451	4753	.7765281	4668	.3369594	9040	239 0 49.2	17.5	0.25	944918
21.0	.5008058	9370	.7805374	4771	.3386096	6443	239 30 69.6	37.8	0.31	944495
21.5	.4932279	3601	.7844864	4270	.3404132	3584	240 0 90.4	58.6	0.36	944074
22.0	.4856120	7452	.7883746	3162	.3421005	0460	240 31 51.5	19.6	0.41	943656
22.5	.4779587	;0929	.7922019	1444	.3437613	7071	241 1 72.9	40.9	0.45	943241
23.0	.4702688	4040	.7959678	9113	.3453955	3416	241 32 34.6	2.5	0.48	942829
23.5	.4625428	6790	.7996721	6166	.3470030	;9494	242 2 56.5	24.3	0.50	942420
24.0	.4547813	9185	.8033145	2600	.3485836	5303	242 32 78.7	46.4	0.51	942015
24.5	.4469850	;1232	.8068948	8413	.3501371	0841	243 3 41.2	8.8	0.51	941614
25.0	.4391546	2938	.8104126	3601	.3516635	6108	243 33 64.0	31.5	0.51	941217
25.5	.4312906	4308	.8138677	8162	.3531627	1103	244 4 87.0	54.4	0.50	940823
26.0	.4233937	5348	.8172598	2093	.3546346	5826	244 34 50.2	17.5	0.48	940434
26.5	.4154645	6066	.8205887	5392	.3560790	0273	245 4 73.6	40.9	0.46	940049
27.0	.4075036	6467	.8238542	8057	.3574959	4446	245 35 37.3	4.5	0.43	939669
27.5	.3995117	6557	.8270560	0085	.3588850	8340	246 5 61.3	28.4	0.40	939293
28.0	.3914894	6343	.8301939	1475	.3602463	1957	246 35 85.5	52.5	0.36	938921
28.5	.3834374	5833	.8332677	2223	.3615799	5297	247 6 49.9	16.8	0.31	938555
29.0	.3753562	5030	.8362773	2330	.3628856	8358	247 36 74.5	41.3	0.25	938194
29.5	.3672463	3940	.8392223	1791	.3641632	1138	248 7 39.4	6.1	0.20	937838
30.0	.3591084	2570	.8421026	0605	.3654126	3636	248 37 64.5	31.1	0.14	937488
30.5	.3509433	0928	.8449180	8770	.3666339	5853	249 7 89.8	56.3	0.08	937145
Dec. 1.0	.3427514	9018	.8476683	6284	.3678270	7788	249 38 55.3	21.7	−0.01	936807
1.5	.3345333	6846	.8505533	3145	.3689917	9439	250 8 81.0	47.4	+0.06	936474
2.0	−.3262897	4418	−.8529729	9352	−.3701280	0806	250 39 47.0	13.3	+0.12	936147

Note.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1873.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ. 9.9
Dec. 2.5	—.3180211	1741	—.8555268	4902	—.3712358	1888	251° 9′ 73″.3	39″.5	+0″.18	935827
3.0	.3097282	8821	.8580149	:9795	.3723151	2685	251 40 39.8	5.9	0.25	935514
3.5	.3014116	5663	.8604368	4025	.3733657	3195	252 10 66.5	32.5	0.31	935207
4.0	.2930718	2273	.8627924	7593	.3743876	3419	252 40 93.5	59.4	0.37	934906
4.5	.2847094	8658	.8650816	0497	.3753807	3354	253 11 60.7	26.5	0.43	934611
5.0	.2763251	4823	.8673042	2735	.3763449	3001	253 41 88.2	53.9	0.48	934323
5.5	.2679194	:0774	.8694601	4306	.3772802	2358	254 12 55.9	21.5	0.52	934041
6.0	.2594929	6517	.8715490	5207	.3781865	1426	254 42 83.9	49.4	0.56	933767
6.5	.2510463	2059	.8735708	5437	.3790636	0201	255 13 52.2	17.7	0.59	933498
7.0	.2425801	7405	.8755252	4994	.3799115	8685	255 43 80.7	46.1	0.62	933236
7.5	.2340948	2560	.8774121	3875	.3807302	6877	256 14 49.5	14.8	0.64	932980
8.0	.2255911	7530	.8792314	2081	.3815196	4776	256 44 78.6	43.8	0.65	932731
8.5	.2170698	2325	.8809828	9607	.3822795	2380	257 15 48.0	13.1	0.65	932488
9.0	.2085314	6949	.8826662	6454	.3830099	:9689	257 45 77.6	42.6	0.64	932251
9.5	.1999765	:1407	.8842814	2619	.3837108	6703	258 16 47.5	12.4	0.63	932019
10.0	.1914058	5707	.8858282	8100	.3843822	3422	258 46 77.7	42.5	0.61	931793
10.5	.1828199	9855	.8873065	2896	.3850238	:9843	259 17 48.1	12.8	0.58	931572
11.0	.1742194	3857	.8887161	7005	.3856356	5966	259 47 78.8	43.4	0.54	931357
11.5	.1656051	7721	.8900568	0425	.3862175	1790	260 18 49.8	14.3	0.50	931148
12.0	.1569775	:1452	.8913285	3155	.3867695	7316	260 48 81.0	45.4	0.46	930944
12.5	.1483372	5056	.8925310	5193	.3872915	2541	261 19 52.4	16.7	0.41	930744
13.0	.1396851	8542	.8936643	6539	.3877835	7466	261 49 84.1	48.3	0.35	930549
13.5	.1310218	1916	.8947281	7190	.3882453	2089	262 20 56.1	20.2	0.29	930360
14.0	.1223480	5184	.8957221	7144	.3886771	6412	262 50 88.3	52.3	0.23	930176
14.5	.1136642	8352	.8966464	6400	.3890786	0433	263 21 60.7	24.6	0.17	929996
15.0	.1049712	:1428	.8975010	4960	.3894498	4151	263 51 93.3	57.1	0.10	929820
15.5	.0962698	4420	.8982858	2821	.3897907	7566	264 22 66.1	29.8	+0.03	929649
16.0	.0875607	7335	.8990005	:9982	.3901011	0676	264 53 39.3	2.9	—0.03	929483
16.5	.0788445	:0179	.8996450	6440	.3903810	3480	265 23 72.5	36.1	0.10	929320
17.0	.0701220	2960	.9002193	2197	.3906305	5981	265 54 45.9	9.4	0.16	929161
17.5	.0613938	5684	.9007233	7250	.3908496	8178	266 24 79.5	42.9	0.22	929006
18.0	.0526606	8357	.9011569	1602	.3910381	0069	266 55 53.3	16.6	0.27	928856
18.5	.0439232	:0989	.9015201	5248	.3911960	1654	267 25 87.2	50.4	0.32	928709
19.0	.0351825	3587	.9018129	8190	.3913234	2934	267 56 61.2	24.3	0.36	928566
19.5	.0264390	6157	.9020352	0427	.3914202	3908	268 26 95.3	58.3	0.40	928427
20.0	.0176935	8707	.9021870	1960	.3914862	4574	268 57 69.5	32.4	0.43	928291
20.5	.0089468	:1245	.9022683	2787	.3915217	4935	269 28 43.8	6.6	0.46	928160
21.0	—.0001996	3778	.9022792	2911	.3915266	4990	269 58 78.1	40.8	0.48	928033
21.5	+.0085476	3690	.9022195	2328	.3915009	4739	270 29 52.6	15.2	0.49	927910
22.0	.0172939	1149	.9020894	1042	.3914444	4181	270 59 87.1	49.6	0.49	927792
22.5	.0260385	8591	.9018889	9052	.3913575	3318	271 30 61.7	24.1	0.48	927678
23.0	.0347809	6011	.9016181	6359	.3912400	2149	272 0 96.3	58.6	0.47	927569
23.5	.0435203	3401	.9012770	2963	.3910918	0673	272 31 70.9	33.1	0.45	927464
24.0	.0522559	0754	.9008636	8864	.3909130	8892	273 2 45.5	7.6	0.42	927364
24.5	.0609871	8062	.9003841	4064	.3907039	6807	273 32 80.1	42.1	0.38	927269
25.0	.0697132	5319	.8998324	8562	.3904643	4417	274 3 54.7	16.6	0.34	927179
25.5	.0784334	2518	.8992106	2359	.3901942	1722	274 33 89.3	51.1	0.30	927094
26.0	.0871470	9651	.8985188	5456	.3898937	8724	275 4 63.9	25.6	0.25	927015
26.5	.0958535	6713	.8977571	7854	.3895629	5422	275 35 38.5	0.2	0.19	926941
27.0	.1045522	3697	.8969256	9555	.3892018	1818	276 5 73.0	34.6	0.13	926873
27.5	.1132423	0595	.8960245	0559	.3888105	7912	276 36 47.6	9.1	0.07	926811
28.0	.1219232	7402	.8950537	0867	.3883889	3703	277 6 82.2	43.6	—0.01	926755
28.5	.1305942	4109	.8940134	0479	.3879372	9193	277 37 56.6	17.9	+0.05	926706
29.0	.1392547	0712	.8929038	9399	.3874554	4382	278 7 91.0	52.2	0.12	926663
29.5	.1479040	7203	.8917249	7625	.3869435	9270	278 38 65.4	26.5	0.19	926626
30.0	.1565414	3575	.8904768	5160	.3864017	3859	279 9 39.7	0.7	0.26	926595
30.5	.1651663	:9822	.8891598	2005	.3858300	8149	279 39 73.9	34.8	0.32	926572
31.0	.1737783	5940	.8877744	8167	.3852284	2140	280 10 48.2	8.9	0.37	926556
31.5	.1823767	1923	.8863201	3640	.3845971	5830	280 40 82.4	43.1	0.42	926546
32.0	+.1909609	7764	—.8847972	8427	—.3839360	9221	281 11 56.6	17.2	+0.48	926543

NOTE.—: denotes a change in the preceding figure.

MERCURY.

1873.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
Jan. 1	240 5160	-0.3734	+0.0524	+0.0379	9.5791	171° 52′.0	+6.65	- 0.94	-0.68
6	5165	0.3981	-0.0802	0.0299	9.6098	191 16.0	5.74	+ 1.15	0.41
11	5170	0.3794	0.2046	0.0167	9.6345	208 19.9	4.61	2.49	0.20
16	5175	0.3256	0.3104	+0.0029	9.6526	223 47.3	3.49	3.32	-0.03
21	5180	0.2453	0.3910	-0.0111	9.6640	238 13.6	2.44	3.87	+0.11
26	5185	0.1462	0.4424	0.0243	9.6688	252 8.1	1.41	4.24	0.24
31	5190	-0.0368	0.4616	0.0357	9.6672	265 56.6	+0.36	4.48	0.34
Feb. 5	5195	+0.0754	0.4469	0.0445	9.6589	280 4.2	-0.77	4.59	0.46
10	5200	0.1816	0.3974	0.0499	9.6441	294 58.1	2.06	4.52	0.56
15	5205	0.2719	0.3136	0.0509	9.6225	311 10.4	3.59	4.14	0.67
20	5210	0.3346	0.1987	0.0468	9.5946	329 20.7	5.36	3.19	0.75
25	5215	0.3568	-0.0603	0.0371	9.5616	350 16.5	7.18	+ 1.21	0.75
March 2	5220	0.3249	+0.0863	0.0218	9.5274	14 45.4	8.27	- 2.20	0.56
7	5225	0.2316	0.2155	-0.0025	9.4995	43 5.9	7.15	6.65	+0.08
12	5230	+0.0860	0.2949	+0.0173	9.4879	74 14.3	-2.88	9.87	-0.58
17	5235	-0.0808	0.3017	0.0328	9.4979	105 29.8	+2.51	9.42	1.02
22	5240	0.2297	0.2387	0.0408	9.5249	134 7.0	5.95	6.19	1.05
27	5245	0.3351	+0.1289	0.0409	9.5590	158 54.0	6.87	- 2.64	0.84
April 1	5250	0.3892	-0.0014	0.0348	9.5922	180 4.7	6.33	+ 0.02	0.56
6	5255	0.3953	0.1324	0.0242	9.6206	198 26.0	5.29	1.77	0.33
11	5260	0.3614	0.2502	+0.0112	9.6427	214 45.9	4.15	2.87	-0.13
16	5265	0.2957	0.3464	-0.0029	9.6580	229 44.7	3.05	3.58	+0.03
21	5270	0.2068	0.4157	0.0167	9.6668	243 54.9	2.02	4.04	0.16
26	5275	-0.1027	0.4542	0.0292	9.6689	257 43.9	+0.99	4.35	0.28
May 1	5280	+0.0089	0.4599	0.0397	9.6646	271 37.0	-0.08	4.54	0.39
6	5285	0.1198	0.4310	0.0472	9.6537	285 59.9	1.27	4.58	0.51
11	5290	0.2209	0.3674	0.0508	9.6361	301 21.5	2.65	4.41	0.61
16	5295	0.3015	0.2705	0.0498	9.6119	318 16.4	4.28	3.85	0.71
21	5300	0.3495	0.1447	0.0435	9.5817	337 27.8	6.12	2.54	0.76
26	5305	0.3511	-0.0011	0.0315	9.5476	359 45.1	7.77	+ 0.01	0.70
31	5310	0.2944	+0.1427	-0.0144	9.5148	25 49.3	8.18	- 3.97	+0.40
June 5	5315	0.1774	0.2554	+0.0057	9.4923	55 31.9	5.75	8.30	-0.18
10	5320	+0.0185	0.3068	0.0243	9.4894	87 6.0	-0.62	10.16	0.80
15	5325	-0.1453	0.2834	0.0370	9.5074	117 33.0	+4.25	8.29	1.08
20	5330	0.2785	0.1982	0.0417	9.5384	144 39.4	6.57	4.68	0.99
25	5335	0.3632	+0.0771	0.0391	9.5729	167 53.9	6.76	- 1.43	0.73
30	5340	0.3971	-0.0556	0.0309	9.6044	187 49.6	5.94	+ 0.83	0.46
July 5	5345	0.3859	0.1823	0.0192	9.6304	205 16.2	4.82	2.29	0.24
10	5350	0.3380	0.2922	+0.0055	9.6497	220 58.8	3.69	3.20	-0.06
15	5355	0.2620	0.3780	-0.0085	9.6624	235 34.2	2.63	3.78	+0.08
20	5360	0.1659	0.4352	0.0220	9.6684	249 32.7	1.60	4.18	0.21
25	5365	-0.0578	0.4606	0.0338	9.6680	263 20.4	+0.56	4.45	0.33
30	5370	+0.0546	0.4524	0.0431	9.6610	277 22.4	-0.55	4.58	0.44
Aug. 4	5375	0.1626	0.4093	0.0492	9.6474	292 5.4	1.81	4.55	0.55
9	5380	0.2567	0.3318	0.0510	9.6271	308 0.2	3.28	4.24	0.66
14	5385	0.3257	0.2225	0.0480	9.6003	325 44.9	5.02	3.43	0.74
19	5390	0.3565	-0.0875	0.0393	9.5681	346 5.8	6.86	+ 1.67	0.76
24	5395	0.3355	+0.0592	0.0251	9.5337	9 51.9	8.19	- 1.45	0.61
29	5400	0.2536	0.1942	-0.0063	9.5038	37 30.6	7.61	5.82	+0.19
Sept. 3	5405	+0.1160	0.2851	+0.0137	9.4884	68 17.5	-3.87	9.51	-0.46
8	5410	-0.0498	+0.3061	+0.0304	9.4945	99 46.1	+1.59	- 9.79	-0.97

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MERCURY.

1873.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$
Sept.	13	240 5415	−0.2046	+0.2549	+0.0399	9.5190	129° 1′.8	+ 5.52	− 6.88	−1.07
	18	5420	0.3193	0.1518	0.0415	9.5525	154 32.7	6.84	3.25	0.89
	23	5425	0.3829	+0.0236	0.0362	9.5863	176 20.8	6.49	− 0.40	0.61
	28	5430	0.3975	−0.1084	0.0264	9.6157	195 10.0	5.51	+ 1.50	0.36
Oct.	3	5435	0.3704	0.2296	+0.0138	9.6390	211 49.3	4.36	2.71	−0.17
	8	5440	0.3100	0.3302	−0.0001	9.6557	227 0.7	3.25	3.46	+0.01
	13	5445	0.2249	0.4049	0.0141	9.6656	241 17.7	2.21	3.97	0.14
	18	5450	0.1231	0.4494	0.0270	9.6690	255 8.8	1.18	4.30	0.26
	23	5455	−0.0122	0.4613	0.0379	9.6659	268 59.2	+ 0.12	4.52	0.37
	28	5460	+0.0994	0.4390	0.0460	9.6563	283 14.5	− 1.04	4.60	0.48
Nov.	2	5465	0.2031	0.3819	0.0505	9.6399	298 22.6	2.38	4.47	0.59
	7	5470	0.2884	0.2911	0.0505	9.6169	314 57.0	3.96	4.00	0.69
	12	5475	0.3436	0.1701	0.0451	9.5877	333 39.2	5.77	2.86	0.76
	17	5480	0.3549	−0.0284	0.0342	9.5541	355 17.9	7.52	+ 0.60	0.72
	22	5485	0.3098	+0.1170	−0.0179	9.5205	20 37.9	8.28	− 3.13	+0.48
	27	5490	0.2034	0.2382	+0.0020	9.4953	49 44.4	6.47	7.58	−0.07
Dec.	2	5495	+0.0500	0.3028	0.0212	9.4882	81 10.3	− 1.66	10.10	0.70
	7	5500	−0.1161	0.2932	0.0352	9.5027	112 3.0	+ 3.50	8.86	1.06
	12	5505	0.2569	0.2178	0.0414	9.5321	139 52.2	6.33	5.37	1.02
	17	5510	0.3514	+0.1014	0.0400	9.5665	163 48.8	6.83	− 1.96	0.78
	22	5515	0.3943	−0.0307	0.0327	9.5989	184 18.1	6.14	+ 0.47	0.51
	27	5520	0.3910	0.1595	0.0215	9.6260	202 9.0	5.04	2.06	0.28
	32	5525	−0.3494	−0.2733	+0.0082	9.6466	218 8.0	+ 3.90	+ 3.05	−0.09

VENUS.

1873.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
Jan.	1	240 5160	+0.6559	+0.3062	−0.0331	9.8601	24° 58′.0	−20.93	− 9.77	+1.06
	6	5165	0.6064	0.3940	0.0290	9.8597	32 57.7	19.41	12.61	0.93
	11	5170	0.5454	0.4742	0.0243	9.8592	40 58.0	17.50	15.22	0.78
	16	5175	0.4736	0.5453	0.0191	9.8588	48 59.3	15.24	17.55	0.62
	21	5180	0.3925	0.6056	0.0136	9.8584	57 1.4	12.67	19.54	0.44
	26	5185	0.3037	0.6540	0.0078	9.8581	65 4.4	9.83	21.16	0.25
	31	5190	0.2089	0.6896	−0.0018	9.8577	73 8.2	6.78	22.37	+0.06
Feb.	5	5195	0.1102	0.7115	+0.0042	9.8574	81 12.8	3.58	23.14	−0.14
	10	5200	+0.0089	0.7194	0.0101	9.8571	89 18.1	− 0.30	23.44	0.33
	15	5205	−0.0923	0.7131	0.0158	9.8568	97 24.1	+ 3.01	23.27	0.52
	20	5210	0.1916	0.6924	0.0213	9.8566	105 30.6	6.26	22.63	0.70
	25	5215	0.2872	0.6583	0.0262	9.8565	113 37.3	9.40	21.53	0.86
March	2	5220	0.3770	0.6106	0.0307	9.8564	121 44.4	12.34	19.99	1.00
	7	5225	0.4595	0.5512	0.0345	9.8564	129 51.7	15.04	18.05	1.13
	12	5230	0.5325	0.4806	0.0377	9.8564	137 58.9	17.43	15.73	1.23
	17	5235	0.5953	0.4005	0.0401	9.8565	146 6.0	19.47	13.10	1.31
	22	5240	0.6460	0.3125	0.0417	9.8566	154 12.8	21.11	10.21	1.36
	27	5245	0.6841	0.2181	0.0425	9.8568	162 19.2	22.33	7.12	1.39
April	1	5250	0.7081	0.1196	0.0424	9.8571	170 25.1	23.08	3.90	1.38
	6	5255	0.7186	+0.0184	0.0415	9.8574	178 30.5	23.37	− 0.60	1.35
	11	5260	0.7146	−0.0830	0.0398	9.8577	186 35.2	23.18	+ 2.69	1.29
	16	5265	−0.6967	−0.1826	+0.0373	9.8581	194 39.0	+22.55	+ 5.91	−1.21

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

VENUS.

1873.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
		240								
April	21	5270	−0.6650	−0.2789	+0.0340	9.8584	202° 42.0′	+21.46	+ 9.00	−1.10
	26	5275	0.6202	0.3695	0.0301	9.8589	210 44.2	19.95	11.89	0.97
May	1	5280	0.5632	0.4529	0.0255	9.8592	218 45.5	18.07	14.53	0.82
	6	5285	0.4953	0.5274	0.0206	9.8597	226 45.9	15.85	16.88	0.66
	11	5290	0.4177	0.5919	0.0151	9.8601	234 45.3	13.34	18.89	0.48
	16	5295	0.3320	0.6446	0.0095	9.8605	242 43.8	10.57	20.51	0.30
	21	5300	0.2396	0.6850	+0.0036	9.8608	250 41.5	7.61	21.75	−0.11
	26	5305	0.1431	0.7122	−0.0023	9.8612	258 38.4	4.53	22.56	+0.07
	31	5310	−0.0436	0.7256	0.0083	9.8615	266 34.6	+ 1.38	22.94	0.26
June	5	5315	+0.0567	0.7249	0.0140	9.8617	274 30.2	− 1.79	22.88	0.44
	10	5320	0.1560	0.7106	0.0195	9.8620	282 25.3	4.91	22.38	0.61
	15	5325	0.2522	0.6825	0.0246	9.8621	290 20.0	7.94	21.48	0.77
	20	5330	0.3438	0.6413	0.0291	9.8622	298 14.4	10.80	20.16	0.91
	25	5335	0.4287	0.5879	0.0333	9.8623	306 8.6	13.47	18.47	1.05
	30	5340	0.5054	0.5232	0.0369	9.8623	314 2.7	15.89	16.44	1.16
July	5	5345	0.5723	0.4486	0.0396	9.8622	321 56.8	17.99	14.11	1.24
	10	5350	0.6284	0.3653	0.0416	9.8621	329 51.2	19.77	11.50	1.31
	15	5355	0.6723	0.2751	0.0427	9.8620	337 45.9	21.18	8.67	1.34
	20	5360	0.7036	0.1796	0.0431	9.8618	345 41.0	22.20	5.66	1.36
	25	5365	0.7211	−0.0806	0.0426	9.8615	353 36.7	22.79	+ 2.55	1.35
	30	5370	0.7249	+0.0199	0.0414	9.8611	1 33.0	22.96	− 0.63	1.31
Aug.	4	5375	0.7148	0.1200	0.0393	9.8608	9 29.9	22.70	3.81	1.25
	9	5380	0.6907	0.2178	0.0364	9.8604	17 27.6	21.98	6.93	1.16
	14	5385	0.6533	0.3115	0.0329	9.8601	25 26.2	20.84	9.94	1.05
	19	5390	0.6033	0.3990	0.0286	9.8596	33 25.7	19.31	12.77	0.91
	24	5395	0.5416	0.4787	0.0240	9.8592	41 26.1	17.38	15.36	0.77
	29	5400	0.4690	0.5491	0.0187	9.8588	49 27.4	15.10	17.68	0.60
Sept.	3	5405	0.3875	0.6088	0.0132	9.8584	57 29.6	12.50	19.65	0.43
	8	5410	0.2983	0.6564	0.0073	9.8580	65 32.7	9.66	21.24	0.24
	13	5415	0.2032	0.6913	−0.0014	9.8576	73 36.7	6.59	22.42	+0.05
	18	5420	0.1039	0.7124	+0.0046	9.8573	81 41.4	3.39	23.16	−0.15
	23	5425	+0.0030	0.7194	0.0105	9.8570	89 46.8	− 0.10	23.45	0.34
	28	5430	−0.0981	0.7122	0.0162	9.8568	97 52.9	+ 3.20	23.26	0.53
Oct.	3	5435	0.1973	0.6907	0.0215	9.8566	105 59.3	6.43	22.59	0.70
	8	5440	0.2927	0.6556	0.0265	9.8565	114 6.2	9.55	21.46	0.86
	13	5445	0.3822	0.6075	0.0309	9.8564	122 13.4	12.51	19.90	1.01
	18	5450	0.4640	0.5471	0.0348	9.8563	130 20.6	15.20	17.92	1.14
	23	5455	0.5366	0.4761	0.0379	9.8564	138 27.9	17.57	15.59	1.24
	28	5460	0.5985	0.3953	0.0403	9.8565	146 35.0	19.59	12.93	1.32
Nov.	2	5465	0.6486	0.3069	0.0418	9.8566	154 41.9	21.19	10.03	1.37
	7	5470	0.6858	0.2123	0.0424	9.8568	162 48.4	22.38	6.93	1.38
	12	5475	0.7093	0.1134	0.0421	9.8571	170 54.3	23.11	3.70	1.37
	17	5480	0.7186	+0.0123	0.0413	9.8574	178 59.6	23.37	− 0.40	1.34
	22	5485	0.7139	−0.0890	0.0397	9.8577	187 4.3	23.15	+ 2.89	1.28
	27	5490	0.6952	0.1886	0.0371	9.8581	195 8.2	22.50	6.10	1.20
Dec.	2	5495	0.6627	0.2844	0.0338	9.8585	203 11.2	21.38	9.18	1.09
	7	5500	0.6170	0.3746	0.0298	9.8588	211 13.3	19.86	12.06	0.96
	12	5505	0.5594	0.4577	0.0253	9.8593	219 14.5	17.95	14.69	0.81
	17	5510	0.4909	0.5316	0.0203	9.8597	227 14.7	15.71	17.01	0.65
	22	5515	0.4127	0.5954	0.0149	9.8601	235 14.1	13.17	19.00	0.47
	27	5520	0.3267	0.6474	0.0091	9.8605	243 12.6	10.40	20.61	0.29
	32	5525	−0.2342	−0.6871	+0.0033	9.8608	251 10.3	+ 7.43	+21.81	−0.10

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 23.

THE EARTH.

1873.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
Jan. 1	240 5160	-0.1950	+0.9639	0.0000	9.9927	101° 26′.4	+ 2.74	-13.52	0.00
11	5170	0.3626	0.9144		9.9928	111 37.9	5.08	12.82	
21	5180	0.5189	0.8366		9.9931	121 48.6	7.26	11.70	
31	5190	0.6592	0.7328		9.9937	131 58.3	9.19	10.21	
Feb. 10	5200	0.7792	0.6065		9.9944	142 6.0	10.80	8.41	
20	5210	0.8752	0.4617		9.9954	152 11.3	12.05	6.36	
March 2	5220	0.9445	0.3027		9.9964	162 14.0	12.92	4.14	
12	5230	0.9853	+0.1345		9.9976	172 13.5	13.37	- 1.83	
22	5240	0.9966	-0.0377		9.9988	182 9.7	13.41	+ 0.50	
April 1	5250	0.9782	0.2087		0.0001	192 2.6	13.04	2.78	
11	5260	0.9309	0.3736		0.0013	201 52.0	12.30	4.94	
21	5270	0.8563	0.5276		0.0025	211 38.1	11.23	6.92	
May 1	5280	0.7569	0.6662		0.0036	221 21.2	9.85	8.67	
11	5290	0.6358	0.7856		0.0046	231 1.4	8.22	10.15	
21	5300	0.4964	0.8827		0.0055	240 39.0	6.38	11.34	
31	5310	0.3429	0.9547		0.0062	250 14.5	4.38	12.20	
June 10	5320	0.1798	0.9996		0.0067	259 48.3	2.29	12.73	
20	5330	-0.0115	1.0163		0.0071	269 21.0	+ 0.15	12.91	
30	5340	+0.1571	1.0046		0.0072	278 53.2	- 1.99	12.75	
July 10	5350	0.3212	0.9645		0.0071	288 25.1	4.08	12.25	
20	5360	0.4763	0.8973		0.0069	297 57.6	6.07	11.41	
30	5370	0.6180	0.8050		0.0064	307 31.1	7.89	10.27	
Aug. 9	5380	0.7423	0.6899		0.0058	317 5.9	9.52	8.85	
19	5390	0.8456	0.5552		0.0050	326 42.6	10.90	7.16	
29	5400	0.9247	0.4046		0.0040	336 21.9	12.00	5.25	
Sept. 8	5410	0.9770	0.2425		0.0029	346 3.9	12.78	3.17	
18	5420	1.0011	-0.0733		0.0018	355 49.0	13.20	+ 0.96	
28	5430	0.9963	+0.0980		0.0005	5 37.2	13.25	- 1.31	
Oct. 8	5440	0.9623	0.2664		9.9993	15 28.6	12.91	3.57	
18	5450	0.8995	0.4269		9.9980	25 23.6	12.17	5.77	
28	5460	0.8096	0.5745		9.9968	35 22.0	11.04	7.84	
Nov. 7	5470	0.6955	0.7049		9.9957	45 23.4	9.56	9.69	
17	5480	0.5603	0.8140		9.9948	55 27.7	7.75	11.26	
27	5490	0.4079	0.8981		9.9940	65 34.5	5.67	12.49	
Dec. 7	5500	0.2428	0.9545		9.9933	75 43.4	3.39	13.34	
17	5510	+0.0704	0.9814		9.9929	85 53.8	- 0.99	13.75	
27	5520	-0.1043	0.9777		9.9927	96 5.2	+ 1.46	13.72	
37	5530	-0.2756	+0.9438	0.0000	9.9927	106 16.6	+ 3.87	- 13.24	0.00

MARS.

1873.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
Jan. 1	240 5160	-1.6010	+0.4470	+0.0483	0.2209	164° 23′.1	+0.61	-0.17	-0.02
11	5170	1.6277	0.3227	0.0463	0.2201	168 46.4	0.63	0.12	0.02
21	5180	1.6439	0.1962	0.0440	0.2191	173 10.7	0.64	0.08	0.02
31	5190	1.6494	+0.0684	0.0414	0.2178	177 36.5	0.65	-0.03	0.02
Feb. 10	5200	1.6441	-0.0598	0.0385	0.2163	182 3.9	0.65	+0.02	0.02
20	5210	1.6278	0.1876	0.0354	0.2146	186 33.3	0.65	0.08	0.01
March 2	5220	1.6006	0.3141	0.0321	0.2126	191 5.1	0.65	0.13	0.01
12	5230	-1.5625	-0.4385	+0.0285	0.2104	195 39.6	+0.65	+0.18	-0.01

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MARS.

1873.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240								
March 22	5240	−1.5136	−0.5598	+0.0247	0.2079	200° 17′.0	+0.64	+0.24	−0.01
April 1	5250	1.4541	0.6772	0.0207	0.2053	204 57.6	0.62	0.29	0.01
11	5260	1.3841	0.7898	0.0166	0.2024	209 41.9	0.60	0.34	0.01
21	5270	1.3040	0.8966	0.0124	0.1994	214 30.0	0.58	0.40	−0.01
May 1	5280	1.2142	0.9967	0.0081	0.1962	219 22.3	0.55	0.45	0.00
11	5290	1.1151	1.0892	+0.0037	0.1928	224 19.1	0.52	0.51	0.00
21	5300	1.0074	1.1731	−0.0007	0.1893	229 20.6	0.48	0.56	0.00
31	5310	0.8915	1.2477	0.0051	0.1857	234 27.1	0.44	0.61	0.00
June 10	5320	0.7684	1.3121	0.0094	0.1820	239 38.8	0.39	0.66	0.00
20	5330	0.6388	1.3654	0.0137	0.1782	244 55.9	0.33	0.70	+0.01
30	5340	0.5037	1.4069	0.0179	0.1745	250 18.5	0.27	0.74	0.01
July 10	5350	0.3641	1.4359	0.0219	0.1707	255 46.8	0.20	0.78	0.01
20	5360	0.2212	1.4519	0.0257	0.1670	261 20.7	0.12	0.81	0.01
30	5370	−0.0763	1.4544	0.0292	0.1634	267 0.4	+0.04	0.83	0.02
Aug. 9	5380	+0.0694	1.4429	0.0325	0.1598	272 45.7	−0.04	0.84	0.02
19	5390	0.2144	1.4173	0.0355	0.1565	278 36.6	0.13	0.85	0.02
29	5400	0.3572	1.3775	0.0381	0.1534	284 32.7	0.22	0.84	0.02
Sept. 8	5410	0.4963	1.3235	0.0403	0.1505	290 33.8	0.31	0.83	0.03
18	5420	0.6303	1.2557	0.0421	0.1479	296 39.4	0.40	0.80	0.03
28	5430	0.7575	1.1746	0.0435	0.1456	302 49.2	0.49	0.76	0.03
Oct. 8	5440	0.8766	1.0808	0.0443	0.1437	309 2.6	0.57	0.71	0.03
18	5450	0.9860	0.9751	0.0447	0.1422	315 18.9	0.65	0.64	0.03
28	5460	1.0846	0.8586	0.0446	0.1411	321 37.4	0.72	0.57	0.03
Nov. 7	5470	1.1710	0.7326	0.0440	0.1405	327 57.5	0.78	0.49	0.03
17	5480	1.2443	0.5983	0.0429	0.1403	334 18.3	0.83	0.40	0.03
27	5490	1.3037	0.4574	0.0414	0.1406	340 39.0	0.87	0.31	0.03
Dec. 7	5500	1.3485	0.3113	0.0393	0.1413	346 58.8	0.90	0.21	0.03
17	5510	1.3783	0.1618	0.0368	0.1425	353 17.0	0.91	0.11	0.02
27	5520	1.3928	−0.0105	0.0340	0.1440	359 32.8	0.91	+0.01	0.02
37	5530	+1.3921	+0.1410	−0.0307	0.1460	5 45.6	−0.90	−0.09	+0.02

JUPITER.

1873.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240								
Jan. 1	5160	−4.27909	+3.21994	+0.08505	0.72883	143° 2′ 48″	+125.84	−94.69	−2.50
11	5170	4.32493	3.16285	0.08629	0.72906	143 49 46	126.99	92.87	2.53
21	5180	4.36994	3.10514	0.08752	0.72929	144 36 40	128.11	91.03	2.56
31	5190	4.41411	3.04684	0.08873	0.72951	145 23 32	129.20	89.19	2.60
Feb. 10	5200	4.45744	2.98796	0.08992	0.72973	146 10 21	130.27	87.33	2.63
20	5210	4.49991	2.92850	0.09109	0.72995	146 57 7	131.32	85.46	2.66
March 2	5220	5.54152	2.86848	0.09225	0.73016	147 43 50	132.34	83.59	2.69
12	5230	4.58266	2.80791	0.09339	0.73038	148 30 30	133.33	81.70	2.72
22	5240	4.62213	2.74681	0.09452	0.73058	149 17 8	134.30	79.81	2.75
April 1	5250	4.66112	2.68518	0.09562	0.73079	150 3 43	135.24	77.91	2.77
11	5260	4.69922	2.62305	0.09670	0.73099	150 50 16	136.15	76.00	2.80
21	5270	4.73643	2.56042	0.09776	0.73119	151 36 46	137.04	74.08	2.83
May 1	5280	4.77274	2.49730	0.09881	0.73139	152 23 13	137.90	72.15	2.85
11	5290	4.80815	2.43370	0.09984	0.73158	153 9 37	138.74	70.22	2.88
21	5300	4.84265	2.36965	0.10085	0.73177	153 56 0	139.55	68.28	2.91

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

JUPITER.

1873.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$
May 31	240 5310	−4.87624	+2.30515	+0.10185	0.73196	154° 42′ 20″	+140.34	−66.34	−2.93
June 10	5320	4.90890	2.24022	0.10282	0.73214	155 28 37	141.10	64.39	2.95
20	5330	4.94064	2.17487	0.10377	0.73232	156 14 52	141.83	62.43	2.98
30	5340	4.97145	2.10910	0.10471	0.73250	157 1 5	142.54	60.47	3.00
July 10	5350	5.00133	2.04293	0.10562	0.73268	157 47 16	143.23	58.50	3.02
20	5360	5.03027	1.97639	0.10651	0.73285	158 33 24	143.89	56.53	3.05
30	5370	5.05826	1.90948	0.10739	0.73302	159 19 31	144.52	54.56	3.07
Aug. 9	5380	5.08531	1.84221	0.10824	0.73318	160 5 35	145.13	52.58	3.09
19	5390	5.11140	1.77459	0.10908	0.73334	160 51 37	145.71	50.59	3.11
29	5400	5.13654	1.70664	0.10989	0.73350	161 37 37	146.26	48.60	3.13
Sept. 8	5410	5.16072	1.63837	0.11068	0.73365	162 23 35	146.80	46.61	3.15
18	5420	5.18394	1.56980	0.11145	0.73380	163 9 31	147.31	44.61	3.17
28	5430	5.20620	1.50094	0.11221	0.73395	163 55 25	147.79	42.61	3.19
Oct. 8	5440	5.22748	1.43179	0.11294	0.73410	164 41 17	148.25	40.61	3.20
18	5450	5.24779	1.36238	0.11365	0.73424	165 27 8	148.68	38.60	3.22
28	5460	5.26713	1.29272	0.11433	0.73437	166 12 57	149.08	36.59	3.24
Nov. 7	5470	5.28550	1.22282	0.11500	0.73451	166 58 44	149.46	34.57	3.25
17	5480	5.30289	1.15269	0.11565	0.73464	167 44 30	149.82	32.56	3.27
27	5490	5.31930	1.08235	0.11628	0.73476	168 30 14	150.15	30.55	3.28
Dec. 7	5500	5.33472	1.01181	0.11688	0.73489	169 15 56	150.46	28.54	3.30
17	5510	5.34915	0.94108	0.11746	0.73501	170 1 36	150.74	26.52	3.31
27	5520	5.36259	0.87018	0.11802	0.73512	170 47 15	151.00	24.50	3.32
37	5530	−5.37504	+0.79912	+0.11856	0.73523	171 32 53	+151.23	−22.48	−3.34

SATURN.

1873.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
Jan. 1	240 5160	+3.95627	−9.19765	−0.00536	1.00054	293° 16′ 31″	−5.33	+12.39	+0.01
11	5170	4.00439	9.17561	0.00766	1.00049	293 34 42	5.40	12.36	0.01
21	5180	4.05239	9.15330	0.00996	1.00044	293 52 53	5.47	12.34	0.01
31	5190	4.10027	9.13072	0.01225	1.00040	294 11 5	5.53	12.31	0.02
Feb. 10	5200	4.14804	9.10787	0.01455	1.00035	294 29 17	5.60	12.29	0.02
20	5210	4.19568	9.08476	0.01685	1.00030	294 47 29	5.66	12.26	0.02
March 2	5220	4.24320	9.06138	0.01915	1.00025	295 5 41	5.73	12.23	0.03
12	5230	4.29060	9.03773	0.02145	1.00020	295 23 54	5.79	12.20	0.03
22	5240	4.33787	9.01382	0.02375	1.00014	295 42 7	5.86	12.18	0.03
April 1	5250	4.38501	8.98963	0.02604	1.00009	296 0 21	5.92	12.15	0.04
11	5260	4.43202	8.96517	0.02833	1.00004	296 18 34	5.99	12.12	0.04
21	5270	4.47890	8.94045	0.03062	0.99999	296 36 48	6.06	12.09	0.04
May 1	5280	4.52565	8.91546	0.03292	0.99993	296 55 2	6.13	12.06	0.04
11	5290	4.57227	8.89021	0.03521	0.99988	297 13 17	6.19	12.03	0.05
21	5300	4.61875	8.86470	0.03750	0.99982	297 31 32	6.26	12.00	0.05
31	5310	4.66510	8.83892	0.03979	0.99976	297 49 47	6.32	11.97	0.05
June 10	5320	4.71131	8.81288	0.04208	0.99971	298 8 2	6.39	11.94	0.06
20	5330	4.75739	8.78659	0.04437	0.99965	298 26 18	6.45	11.91	0.06
30	5340	4.80333	8.76004	0.04666	0.99959	298 44 34	6.52	11.88	0.06
July 10	5350	4.84912	8.73322	0.04894	0.99953	299 2 50	6.58	11.85	0.07
20	5360	4.89477	8.70614	0.05123	0.99947	299 21 7	6.65	11.82	0.07
30	5370	+4.94027	−8.67881	−0.05351	0.99941	299 39 24	−6.71	+11.78	+0.07

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

SATURN.

1872.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240								
Aug. 9	5380	+4.98562	−8.65122	−0.05579	0.99935	299° 57′ 41″	−6.77	+11.75	+0.08
19	5390	5.03083	8.62337	0.05807	0.99929	300 15 59	6.83	11.72	0.08
29	5400	5.07589	8.59526	0.06035	0.99923	300 34 17	6.90	11.69	0.08
Sept. 8	5410	5.12080	8.56690	0.06262	0.99917	300 52 35	6.96	11.65	0.09
18	5420	5.16555	8.53828	0.06489	0.99911	301 10 53	7.03	11.62	0.09
28	5430	5.21015	8.50941	0.06716	0.99904	301 29 12	7.09	11.58	0.09
Oct. 8	5440	5.25460	8.48029	0.06943	0.99898	301 47 31	7.16	11.55	0.09
18	5450	5.29890	8.45091	0.07170	0.99891	302 5 51	7.22	11.51	0.10
28	5460	5.34304	8.42128	0.07397	0.99885	302 24 11	7.29	11.48	0.10
Nov. 7	5470	5.38702	8.39139	0.07623	0.99878	302 42 31	7.35	11.44	0.10
17	5480	5.43084	8.36125	0.07849	0.99872	303 0 52	7.41	11.41	0.11
27	5490	5.47449	8.33087	0.08075	0.99865	303 19 13	7.47	11.37	0.11
Dec. 7	5500	5.51798	8.30024	0.08301	0.99858	303 37 34	7.54	11.34	0.11
17	5510	5.56131	8.26936	0.08526	0.99851	303 55 56	7.60	11.30	0.12
27	5520	5.60448	8.23823	0.08751	0.99844	304 14 18	7.66	11.26	0.12
37	5530	+5.64747	−8.20686	−0.08976	0.99837	304 32 40	−7.72	+11.22	+0.12

URANUS.

1872.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240								
Jan. 1	5160	−10.24373	+15.44853	+0.19304	1.26804	123° 32′ 52″	+0.30	−0.46	−0.01
Feb. 10	5200	10.37612	15.35349	0.19440	1.26792	124 3 7	0.31	0.46	0.01
Mar. 22	5240	10.50771	15.25731	0.19573	1.26780	124 33 21	0.32	0.46	0.01
May 1	5280	10.63851	15.15996	0.19702	1.26767	125 3 37	0.32	0.45	0.01
June 10	5320	10.76850	15.06149	0.19834	1.26755	125 33 53	0.32	0.45	0.01
July 20	5360	10.89766	14.96186	0.19964	1.26743	126 4 10	0.33	0.45	0.01
Aug. 29	5400	11.02600	14.86111	0.20091	1.26731	126 34 27	0.33	0.45	0.01
Oct. 8	5440	11.15350	14.75931	0.20216	1.26719	127 4 47	0.33	0.44	0.01
Nov. 17	5480	11.28015	14.65639	0.20340	1.26707	127 35 8	0.34	0.44	0.01
Dec. 27	5520	−11.40594	+14.55234	+0.20462	1.26695	128 5 29	+0.34	−0.44	−0.01

NEPTUNE.

1872.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240								
Jan. 1	5160	+26.9376	+12.7698	−0.8957	1.47457	25° 22′.2	−0.26	−0.12	+0.01
Feb. 10	5200	26.8827	12.8837	0.8967	1.47457	25 36.8	0.26	0.13	0.01
Mar. 22	5240	26.8273	12.9974	0.8977	1.47456	25 51.4	0.25	0.13	0.01
May 1	5280	26.7715	13.1108	0.8987	1.47455	26 5.9	0.25	0.13	0.01
June 10	5320	26.7152	13.2240	0.8996	1.47454	26 20.5	0.25	0.13	0.01
July 20	5360	26.6584	13.3370	0.9005	1.47454	26 35.1	0.25	0.13	0.01
Aug. 29	5400	26.6011	13.4497	0.9015	1.47453	26 49.7	0.25	0.13	0.01
Oct. 8	5440	26.5434	13.5622	0.9024	1.47452	27 4.2	0.25	0.13	0.01
Nov. 17	5480	26.4853	13.6744	0.9033	1.47452	27 18.8	0.25	0.13	0.01
Dec. 27	5520	+26.4267	+13.7864	−0.9041	1.47451	27 33.4	−0.25	−0.13	+0.01

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

INCLINATIONS AND NODES.

Planet.	Inclination.	Increase in 100 Days.	Longitude of Ascending Node.	Increase in 100 Days.
	° ′ ″	″	° ′ ″	″
Mercury . . .	7 0 9.8	+0.01947	46 49 3	+11.643
Venus	3 23 35.4	+0.01195	75 33 5	9.004
Mars	1 51 1.8	—0.00586	48 34 2	7.585
Jupiter	1 18 35.1	—0.06189	99 7 16	9.402
Saturn	2 29 19.2	—0.03824	112 30 56	8.425
Uranus	0 46 30.2	+0.00835	73 20 59	4.898
Neptune . . .	1 46 54.3	—0.09024	130 22 29	+10.885

Note.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

MASSES. Sun's=1.

Planet.	Mass.	Log. of Mass.	Authority.
Mercury . .	$\frac{1}{4865751}$ =.000 000 206	93.31285	Encke, *A. N.*, No. 443.
Venus . . .	$\frac{1}{390000}$ =.000 002 564	94.40893	Le Verrier, *Théor. de Merc.*, p. 115.
The Earth .	$\frac{1}{354936}$ =.000 002 817	94.44985	Le Verrier, *Théor. de Merc.*, p. 26.
Mars . . .	$\frac{1}{2680637}$ =.000 000 373	93.57176	Burckhardt, *Conn. des Temps.*, 1816, p. 343.
Jupiter . .	$\frac{1}{1047.879 \pm .235}$ =.000 954 308	96.979689	Bessel, *Die Masse des Jupiter*, p. 64.
Saturn . . .	$\frac{1}{3501.6}$ =.000 285 584	96.455733	Bessel, *Comptes Rendus*, 1841.
Uranus . .	$\frac{1}{24905}$ =.000 040 153	95.60371	Lamont, *Mem. Ast. Soc.*, Vol. XI. p. 54.
Neptune . .	$\frac{1}{18780}$ =.000 053 248	95.72630	Peirce, *Am. Ac. Proc.*, Vol. I. p. 333.

ECLIPSES IN 1873.

In the year 1873 there will be four Eclipses; two of the Sun, and two of the Moon.

I. A Total Eclipse of the Moon, May 11, 1873, invisible at Washington, with the following elements:

Washington mean time of ☍ in Right Ascension, May 11^{d} 18^{h} 2^{m} $26^{s}.9$.

	h m s		s
Sun's Right Ascension	3 17 17.60	Hourly Motion	9.80
Moon's Right Ascension	15 17 17.60	" "	130.08
	° ′ ″		′ ″
Sun's Declination	+18 12 56.6	Hourly Motion	+ 0 37.5
Moon's Declination	−17 59 1.1	" "	−11 26.9
Sun's Equa. Hor. Par.	8.5	True Semidiameter	15 51.7
Moon's Equa. Hor. Par.	56 58.7	" "	15 30.8

From these elements may be deduced the following results:—

		d	h	m	
Moon enters Penumbra,	May	11	15	18.8	Washington mean time.
Moon enters Shadow		11	16	22.1	" "
Total Phase begins		11	17	26.7	" "
Middle of Total Phase		11	18	12.1	" "
Total Phase ends		11	18	57.6	" "
Moon leaves Shadow		11	20	2.2	" "
Moon leaves Penumbra		11	21	5.5	" "

First contact of Shadow with Moon's limb 124° from north point towards the East, when the Moon is in the zenith, in longitude 67° 19′ West from Washington and in latitude 17° 46′ South.

Last contact of Shadow with Moon's limb 82° from north point towards the West, when the Moon is in the zenith, in longitude 120° 31′ West from Washington and in latitude 18° 29′ South.

Magnitude of Eclipse = 1.437 (Moon's diameter = 1).

II. A Partial Eclipse of the Sun, May 25, 1873, invisible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension, May 25^{d} 16^{h} 34^{m} $3^{s}.8$.

	h m s		s s
Sun's and Moon's R. A.	4 12 52.06	Hourly Motions	10.13 and 139.06
	° ′ ″		′ ″
Sun's Declination	+21 10 29.7	Hourly Motion	+0 25.8
Moon's Declination	+22 13 0.9	" "	+8 55.6
Sun's Equa. Hor. Par.	8.5	True Semidiameter	15 49.1
Moon's Equa. Hor. Par.	57 20.4	" "	15 36.7

From these elements may be deduced the following results:—

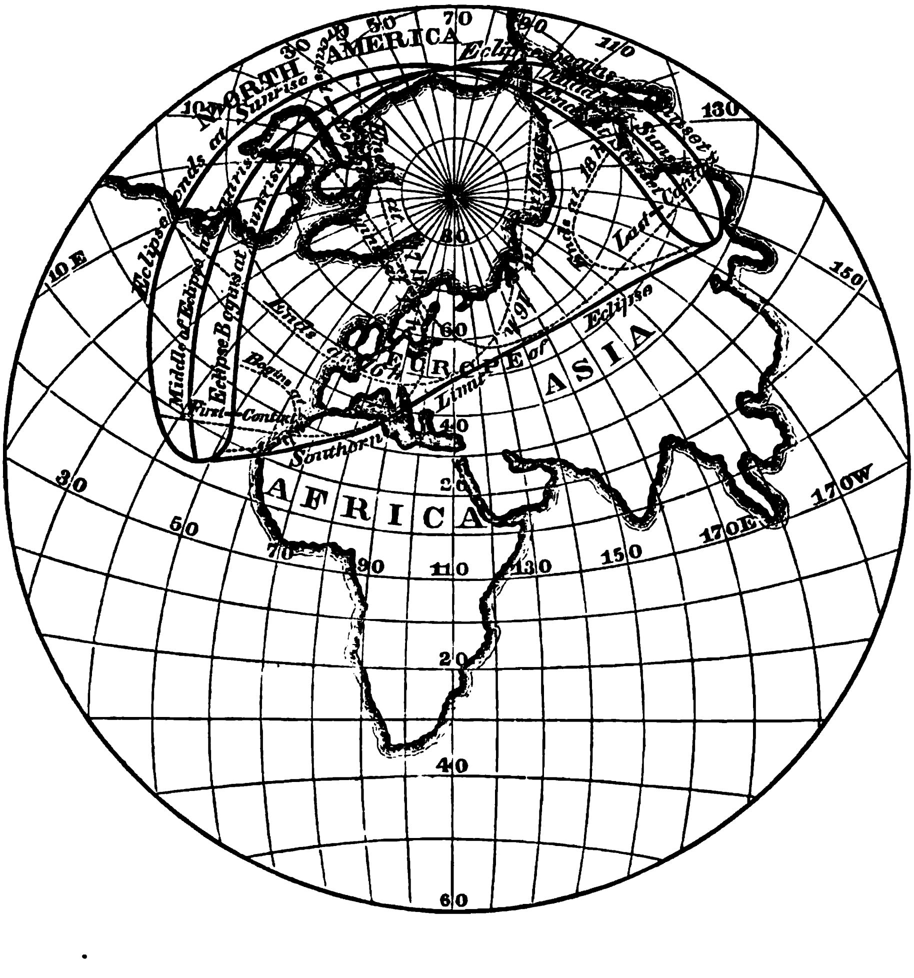
Eclipse begins on the Earth May 25^{d} 13^{h} $55^{m}.0$, Washington mean time, in longitude 50° 8′.0 East from Washington and in latitude 24° 57′.5 North.

Greatest Eclipse 16^{h} $0^{m}.8$, in longitude 22° 38′.5 West from Washington and in latitude 63° 51′.8 North.

Eclipse ends on the Earth 18^{h} $6^{m}.5$, in longitude 151° 43′.5 West from Washington and in latitude 52° 59′.9 North.

Magnitude of Greatest Eclipse = 0.897 (Sun's diameter = 1).

OUTLINES AND PATH OF THE PENUMBRA OF THE ECLIPSE OF MAY 25, 1873.



DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log. E.	log. F.	log. G.	log. H.	μ
h m				9.97	9.96	+9.55	+9.56	° ′ ″
13 50	−1.42628	+1.23336	+0.13519	0479	8925	2130	2510	208 18 41.8
14 0	1.33937	1.25837	0.16015	0476	8922	2152	2533	210 48 41.9
14 10	1.25246	1.28337	0.18510	0473	8918	2175	2555	213 18 42.0
14 20	1.16554	1.30836	0.21004	0469	8915	2198	2577	215 48 42.1
14 30	1.07862	1.33335	0.23497	0466	8911	2220	2599	218 18 42.3
14 40	0.99170	1.35833	0.25989	0463	8908	2243	2621	220 48 42.4
14 50	0.90477	1.38329	0.28481	0459	8905	2266	2643	223 18 42.5
15 0	0.81784	1.40824	0.30972	0456	8901	2288	2665	225 48 42.6
15 10	0.73091	1.43318	0.33462	0453	8898	2311	2687	228 18 42.7
15 20	0.64397	1.45812	0.35951	0449	8894	2334	2709	230 48 42.9
15 30	0.55703	1.48305	0.38439	0446	8891	2356	2731	233 18 43.0
15 40	0.47009	1.50797	0.40926	0443	8888	2379	2753	235 48 43.1
15 50	0.38315	1.53287	0.43412	0440	8884	2401	2775	238 18 43.2
16 0	0.29620	1.55776	0.45898	0436	8881	2424	2797	240 48 43.3
16 10	0.20925	1.58264	0.48383	0433	8877	2447	2819	243 18 43.5
16 20	0.12230	1.60751	0.50866	0430	8874	2469	2841	245 48 43.6
16 30	−0.03535	1.63237	0.53348	0426	8871	2492	2863	248 18 43.7
16 40	+0.05160	1.65722	0.55829	0423	8867	2514	2885	250 48 43.8
16 50	0.13856	1.68206	0.58309	0420	8864	2537	2907	253 18 43.9
17 0	0.22552	1.70688	0.60788	0417	8861	2560	2929	255 48 44.0
17 10	0.31247	1.73169	0.63266	0413	8857	2582	2950	258 18 44.2
17 20	0.39943	1.75649	0.65743	0410	8854	2605	2972	260 48 44.3
17 30	0.48639	1.78129	0.68219	0407	8850	2627	2994	263 18 44.4
17 40	0.57335	1.80607	0.70694	0403	8847	2650	3016	265 48 44.5
17 50	0.66031	1.83083	0.73168	0400	8844	2672	3038	268 18 44.6
18 0	0.74727	1.85558	0.75640	0397	8840	2695	3060	270 48 44.7
18 10	+0.83424	+1.88031	+0.78111	0394	8837	2717	3082	273 18 44.8

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
13 30	+8689.8	+2502.6	+2497.0	+144.83	+41.71	+41.62
14 0	8691.1	2500.4	2495.0	144.85	41.67	41.58
14 30	8692.2	2497.8	2492.8	144.87	41.63	41.55
15 0	8693.2	2495.0	2490.4	144.89	41.58	41.51
15 30	8694.0	2492.0	2487.7	144.90	41.53	41.46
16 0	8694.7	2488.7	2484.8	144.91	41.48	41.41
16 30	8695.3	2485.3	2481.7	144.92	41.42	41.36
17 0	8695.5	2481.9	2478.6	144.92	41.36	41.31
17 30	8695.8	2478.3	2475.3	144.93	41.30	41.25
18 0	8696.4	2474.3	2471.7	144.94	41.24	41.19
18 30	+8697.3	+2469.8	+2467.8	+144.95	+41.16	+41.13

III. A Total Eclipse of the Moon, November 3–4, 1873, invisible at Washington, with the following elements:

Washington mean time of ☍ in Right Ascension, November $3^d\ 22^h\ 31^m\ 43^s.0$.

	h m s		s
Sun's Right Ascension	14 39 30.60	Hourly Motion	9.92
Moon's Right Ascension	2 39 30.60	" "	138.95
	° ′ ″		′ ″
Sun's Declination	−15 32 50.2	Hourly Motion	− 0 46.0
Moon's Declination	+15 17 6.6	" "	+14 16.3
Sun's Equa. Hor. Par.	8.7	True Semidiameter	16 10.8
Moon's Equa. Hor. Par.	59 54.7	" "	16 18.7

From these elements may be deduced the following results:

	d h m	
Moon enters Penumbra, November	3 19 59.5	Washington mean time.
Moon enters Shadow	3 20 57.8	" "
Total Phase begins	3 21 59.4	" "
Middle of Total Phase	3 22 42.8	" "
Total Phase ends	3 23 26.1	" "
Moon leaves Shadow	4 0 27.7	" "
Moon leaves Penumbra	4 1 26.0	" "

First contact of Shadow with Moon's limb 53° from north point towards the East, when the Moon is in the zenith, in longitude 139° 22′ West from Washington and in latitude 15° 0′ North.

Last contact of Shadow with Moon's limb 100° from north point towards the West, when the Moon is in the zenith, in longitude 170° 2′ East from Washington and in latitude 15° 50′ North.

Magnitude of Eclipse = 1.430 (Moon's diameter = 1).

IV. A Partial Eclipse of the Sun, November 19, 1873, invisible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension, November $19^d\ 11^h\ 2^m\ 34^s.6$.

	h m s		s s
Sun's and Moon's R. A.	15 42 46.52	Hourly Motions	10.46 and 130.30
	° ′ ″		′ ″
Sun's Declination	−19 43 11.4	Hourly Motion	− 0 34.0
Moon's Declination	−20 57 39.1	" "	− 9 56.5
Sun's Equa. Hor. Par.	8.7	True Semidiameter	16 14.1
Moon's Equa. Hor. Par.	56 6.3	" "	15 16.6

From these elements may be deduced the following results:

Eclipse begins on the Earth, November $19^d\ 8^h\ 29^m.6$, Washington mean time, in longitude 125° 36′.6 East from Washington and in latitude 33° 10′.3 South.

Greatest Eclipse $10^h\ 14^m.5$, in longitude 67° 35′.4 East from Washington and in latitude 63° 22′.5 South.

Eclipse ends on the Earth $11^h\ 59^m.2$, in longitude 46° 34′.8 West from Washington and in latitude 63° 57′.0 South.

Magnitude of Greatest Eclipse = 0.514 (Sun's diameter = 1).

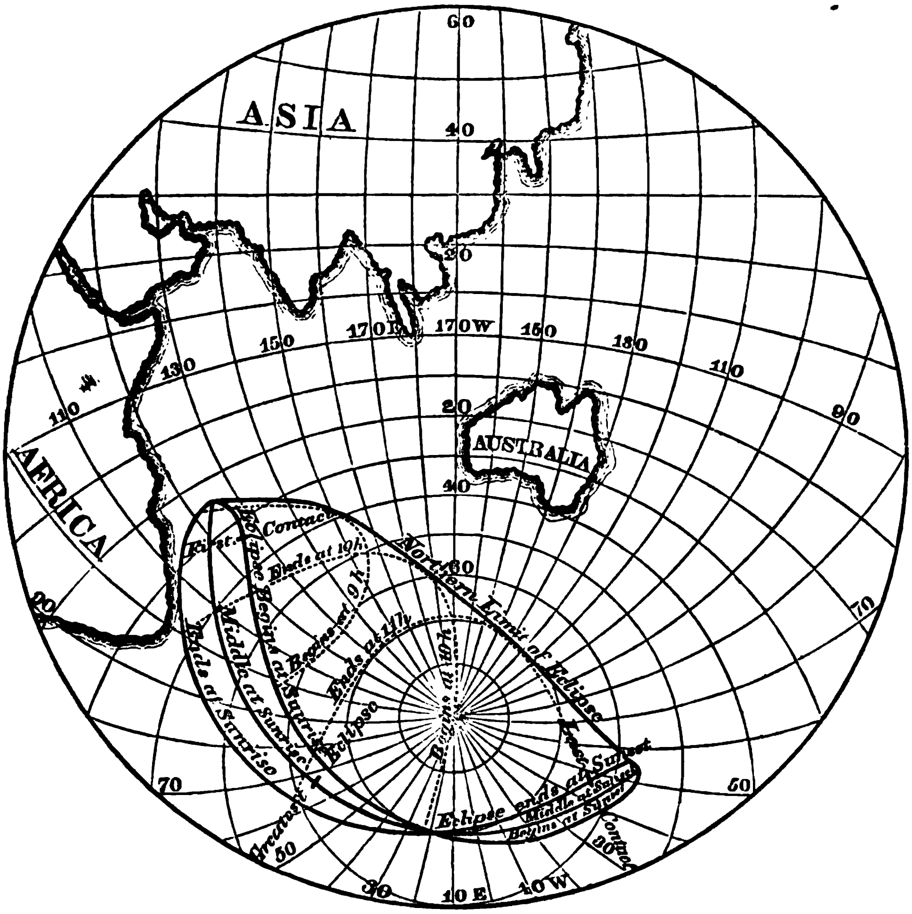
DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log. E.	log. F.	log. G.	log. H.	μ
h m				9.97	9.97	−9.53	−9.52	
8 20	−1.35416	−0.31359	−1.44018	3090	4565	3306	1787	128° 33′ 26″.5
8 30	1.27091	0.34158	1.46815	3086	4561	3338	1819	131 3 25.8
8 40	1.18765	0.36956	1.49611	3081	4557	3369	1852	133 33 25.1
8 50	1.10438	0.39753	1.52406	3077	4553	3401	1884	136 3 24.3
9 0	1.02111	0.42549	1.55199	3073	4549	3433	1917	138 33 23.6
9 10	0.93783	0.45344	1.57991	3069	4545	3464	1949	141 3 22.8
9 20	0.85455	0.48138	1.60783	3065	4541	3496	1982	143 33 22.1
9 30	0.77126	0.50932	1.63574	3061	4537	3527	2014	146 3 21.3
9 40	0.68797	0.53725	1.66364	3057	4533	3559	2047	148 33 20.6
9 50	0.60467	0.56517	1.69153	3052	4529	3590	2079	151 3 19.8
10 0	0.52137	0.59308	1.71940	3048	4525	3622	2111	153 33 19.1
10 10	0.43806	0.62098	1.74726	3044	4521	3653	2144	156 3 18.3
10 20	0.35475	0.64888	1.77511	3040	4517	3685	2176	158 33 17.6
10 30	0.27144	0.67677	1.80296	3036	4513	3716	2209	161 3 16.8
10 40	0.18812	0.70465	1.83080	3032	4509	3747	2241	163 33 16.1
10 50	0.10480	0.73252	1.85863	3027	4505	3779	2273	166 3 15.3
11 0	−0.02147	0.76038	1.88644	3023	4501	3810	2306	168 33 14.6
11 10	+0.06186	0.78823	1.91425	3019	4497	3842	2338	171 3 13.8
11 20	0.14519	0.81607	1.94205	3015	4493	3873	2371	173 33 13.1
11 30	0.22853	0.84391	1.96984	3011	4489	3905	2403	176 3 12.3
11 40	0.31187	0.87173	1.99762	3007	4485	3936	2435	178 33 11.6
11 50	0.39522	0.89954	2.02539	3002	4481	3967	2468	181 3 10.8
12 0	+0.47857	−0.92734	−2.05314	2998	4477	3999	2500	183 33 10.1

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
8 0	+8324.0	−2800.9	−2798.9	+138.73	−46.68	−46.65
8 30	8325.8	2798.3	2796.0	138.76	46.64	46.60
9 0	8327.5	2795.7	2793.1	138.79	46.60	46.55
9 30	8329.0	2793.2	2790.2	138.82	46.55	46.50
10 0	8330.4	2790.8	2787.1	138.84	46.51	46.45
10 30	8331.7	2788.3	2784.1	138.86	46.47	46.40
11 0	8332.9	2785.6	2781.2	138.88	46.43	46.35
11 30	8334.0	2782.7	2778.2	138.90	46.38	46.30
12 0	+8334.9	−2779.7	−2774.8	+138.92	−46.33	−46.25

OUTLINES AND PATH OF THE PENUMBRA OF THE ECLIPSE OF NOVEMBER 19, 1873.



OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1873.

Date.	Star's Name.	Magnitude.	IMMERSION. Washington Sidereal Time.	IMMERSION. Washington Mean Time.	IMMERSION. Angle from North Point.	IMMERSION. Angle from Vertex.	EMERSION. Washington Sidereal Time.	EMERSION. Washington Mean Time.	EMERSION. Angle from North Point.	EMERSION. Angle from Vertex.	Duration of Occultation.
			h m	h m	°	°	h m	h m	°	°	h m
Jan. 1	B. A. C. 7550*	6	2 30	7 41	254	303	3 11	8 24	156	206	0 41
5	*f* Piscium	5½	3 41	8 38	213	252	Star 2′.1	south of	☽ 's	limb.	
5	B. A. C. 408‡	6½	6 36	11 33	313	4	7 31	12 28	97	148	0 55
8	B. A. C. 1242*	6	11 18	16 3	328	15	11 52	16 36	50	94	0 34
9	τ Tauri	4½	5 21	10 2	346	15	6 8	10 49	49	95	0 47
10	132 Tauri	5½	12 39	17 16	178	227	Star 7′.3	south of	☽ 's	limb.	
13	λ Cancri	6	7 22	11 47	355	323	Star 0′.7	north of	☽ 's	limb.	
19	48 Virginis	6	13 9	17 9	140	143	Star 0′.5	south of	☽ 's	limb.	
Feb 5	κ^2 Tauri	6½	5 6	8 1	337	4	6 6	9 1	62	110	1 0
8	A Geminor.‡	5½	14 12	16 54	245	295	15 2	17 44	93	136	0 50
12	B. A. C. 3579	6	6 37	9 4	159	107	Star 4′.2	south of	☽ 's	limb.	
12	*i* Leonis	6	8 27	10 54	205	163	9 39	12 6	96	75	1 12
19	B. A. C. 5281†	6	10 34	12 33	260	212	11 32	13 31	47	2	0 58
20	B. A. C. 5709	6	14 2	15 56	183	150	14 33	16 27	132	104	0 31
20	26 Ophiuchi	6	13 45	15 40	220	184	14 49	16 44	96	71	1 4
28	14 Ceti‡	6½	5 48	7 12	328	19	6 35	8 0	87	138	0 47
28	15 Ceti*	6½	6 58	8 22	327	18	7 41	9 5	84	133	0 43
Mar. 1	μ Piscium	5	6 38	7 58	274	325	7 30	8 51	136	187	0 52
5	103 Tauri	6	9 44	10 48	273	330	10 48	11 52	92	147	1 4
6	139 Tauri	5½	6 51	7 52	244	287	8 9	9 10	120	178	1 18
7	39 Geminor.	6½	10 54	11 51	219	279	11 47	12 44	117	175	0 53
7	40 Geminor.	6½	11 5	12 1	252	311	12 10	13 7	85	142	1 6
11	42 Leonis	6	12 17	12 57	246	290	13 32	14 12	47	99	1 16
11	B. A. C. 3579*	6	17 16	17 55	168	217	17 27	18 7	143	191	0 12
13	*b* Virginis	6	16 7	16 39	289	338	16 49	17 20	9	60	0 42
14	γ Virg., *mult.*	2½	17 18	17 45	275	325	18 15	18 43	48	99	0 57
17	α^1 Libræ	6	10 48	11 5	327	284	Star 7′.3	north of	☽ 's	limb.	
17	α^2 Libræ	2½	10 54	11 11	327	284	Star 8′.7	north of	☽ 's	limb.	
23	B. A. C. 7237	6	17 44	17 36	345	311	18 16	18 8	37	7	0 32
25	τ^1 Aqu., *mult.**	6	15 58	15 43	297	246	16 51	16 35	99	48	0 53
25	τ^2 Aquarii*	4	16 51	16 35	225	174	17 16	17 0	174	124	0 25
30	σ Arietis	6	8 9	7 36	290	343	9 6	8 33	106	157	0 57
31	13 Tauri	5½	6 11	5 34	266	317	7 20	6 43	130	185	1 9
Apr. 5	λ Cancri	6	7 21	6 23	280	246	8 45	7 48	48	70	1 24
6	B. A. C. 3138	6	10 4	9 3	181	214	10 47	9 45	124	170	0 43
7	η Leonis	3½	14 44	13 38	150	205	Star 3′.6	south of	☽ 's	limb.	
11	46 Virginis	6	9 22	8 1	284	241	10 10	8 48	2	324	0 48
11	48 Virginis	6	12 34	11 12	206	199	13 51	12 29	73	88	1 17
14	B. A. C. 5109	6	16 55	15 21	153	173	Star 0′.2	south of	☽ 's	limb.	
15	ρ Ophi., *mult.*	5	15 7	13 29	211	196	16 16	14 38	99	98	1 9
16	B. A. C. 5909	6½	20 28	18 46	178	212	Star 2′.6	south of	☽ 's	limb.	
18	B. A. C. 6666	6	16 52	15 1	262	233	18 11	16 20	100	85	1 19
19	B. A. C. 7077	6	17 52	15 58	318	288	18 54	17 0	63	44	1 2
28	56 Tauri	6	11 6	8 38	8	57	Star 1′.5	north of	☽ 's	limb.	
May 2	ω^2 Cancri	6½	9 35	6 51	214	264	10 41	7 57	108	167	1 6
5	*i* Leonis	6	11 11	8 16	273	293	12 17	9 21	16	57	1 5
13	B. A. C. 5709	6	13 18	9 50	216	177	14 16	10 48	99	68	0 59
13	26 Ophiuchi	6	13 49	10 21	175	140	14 10	10 42	140	108	0 21
15	τ Sagittarii	3½	15 37	12 1	174	136	Star 1′.4	south of	☽ 's	limb.	
June 1	42 Leonis‡	6	16 47	12 4	249	300	17 40	12 57	62	109	0 53
3	B. A. C. 3996	6	15 30	11 39	221	272	16 30	12 39	79	130	1 0
7	5 Libræ	6	12 34	7 28	244	216	13 52	8 46	45	34	1 18
7	α^1 Libræ	6	16 12	11 6	299	320	16 56	11 50	5	34	0 44

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1873.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
June 7	α^2 Libræ	2½	16 20	11 13	296	318	17 7	12 1	9	39	0 48
9	18 Ophiuchi*	6	21 49	16 34	341	30	22 4	16 49	9	60	0 14
10	B.A.C.6024‡	6½	21 12	15 53	261	299	22 17	16 58	103	150	1 5
12	ω Sagittarii	5	19 38	14 11	281	279	20 58	15 31	106	121	1 20
12	A Sagittarii	5	21 24	15 58	264	284	22 31	17 4	132	163	1 7
13	B. A. C. 7237	6	16 44	11 13	258	215	17 50	12 20	117	83	1 6
15	τ^1 Aqu., *mult.*†	6	16 44	11 6	299	247	17 42	12 4	100	51	0 58
15	τ^2 Aquarii	4	18 22	12 43	22	336	Star 2′.7	north of	☽'s	limb.	
18	B. A. C. 408*	6½	18 5	12 15	332	283	18 46	12 56	79	28	0 41
26	λ Cancri	6	14 51	8 30	343	34	Star 5′.3	north of	☽'s	limb.	
July 2	κ Virginis‡	6	17 55	11 10	225	274	18 55	12 10	81	132	1 0
3	*m* Virginis	6	16 10	9 22	265	300	17 19	10 30	33	76	1 8
9	B. A. C. 6666	6	21 26	14 13	263	288	22 32	15 19	125	161	1 6
10	B. A. C. 7077	6	20 46	13 29	209	205	Star 1′.0	south of	☽'s	limb.	
11	35 Capricor.†	6	16 14	8 54	293	244	17 16	9 55	92	49	1 1
14	B. A. C. 81	6½	22 28	14 55	325	297	23 40	16 6	111	100	1 12
17	σ Arietis	6	20 4	12 19	25	335	Star 4 .7	north of	☽'s	limb.	
19	τ Tauri	4½	21 22	13 29	256	208	22 5	14 13	142	91	0 43
28	*b* Virginis‡	6	17 17	8 50	265	316	18 12	9 45	39	90	0 55
29	γ Virg., *mult.*	2½	16 59	8 28	304	352	17 28	8 57	357	47	0 29
Aug. 4	B. A. C. 6024	6½	20 21	11 26	304	334	21 22	12 27	58	98	1 1
6	ω Sagittarii	5	17 59	8 56	281	259	19 17	10 14	96	90	1 19
6	A Sagittarii	5	19 41	10 38	278	276	20 59	11 56	111	125	1 18
15	κ^1 Tauri	4½	21 17	11 38	266	217	22 5	12 26	135	82	0 48
15	κ^2 Tauri	6½	21 22	11 43	241	192	21 55	12 16	161	109	0 34
15	υ^1 Tauri	4½	22 24	12 45	21	327	Star 7′.8	north of	☽'s	limb.	
26	θ Virg., *mult.*	4½	17 6	6 45	230	276	18 14	7 53	72	122	1 8
30	19 Scorpii	6	17 12	6 35	198	211	18 4	7 28	124	148	0 52
31	38 Ophiuchi	6½	16 48	6 7	251	246	18 14	7 34	83	97	1 26
Sept. 2	B. A. C. 6666	6	21 32	10 43	308	334	22 38	11 49	82	119	1 6
3	B. A. C. 7077	6	21 2	10 8	239	247	21 47	10 54	164	181	0 46
4	35 Capricorni	6	16 45	5 48	303	256	17 46	6 49	85	45	1 1
4	B. A. C. 7550	6	1 25	14 27	278	320	2 19	15 21	139	186	0 54
7	B. A. C. 81	6½	19 22	8 13	292	243	20 22	9 13	129	83	1 0
7	14 Ceti	6½	2 34	15 24	216	249	Star 1′.1	south of	☽'s	limb.	
14	39 Geminor.	6½	23 45	12 8	186	137	Star 3′.1	south of	☽'s	limb.	
15	ω^1 Cancri	6	3 24	15 43	359	300	Star 1′.5	north of	☽'s	limb.	
15	ω^2 Cancri	6½	3 15	15 33	263	205	4 28	16 46	94	35	1 13
18	B. A. C. 3579	6	4 5	16 12	190	139	4 34	16 40	133	89	0 29
18	*i* Leonis	6	5 43	17 49	220	166	6 47	18 53	93	41	1 5
26	B. A. C. 5354*	6½	21 7	8 43	171	220	Star 4′.4	south of	☽'s	limb.	
29	τ Sagittarii‡	3½	22 48	10 12	274	315	23 50	11 15	113	162	1 3
Oct. 8	13 Tauri	5½	23 5	9 53	208	153	Star 1′.8	south of	☽'s	limb.	
10	125 Tauri	6	23 18	9 58	256	203	0 6	10 47	136	80	0 49
12	*c* Geminor.	6	4 15	14 47	222	162	5 16	15 48	135	78	1 2
13	υ^2 Cancri	6½	0 31	11 0	356	312	Star 4′.3	north of	☽'s	limb.	
13	υ^3 Cancri	6	1 43	11 12	356	306	Star 4′.4	north of	☽'s	limb.	
24	25 Scorpii	6	20 40	6 27	276	318	21 47	7 33	74	123	1 6
25	3 Sagittarii	5	22 55	8 37	184	235	Star 3′.8	south of	☽'s	limb.	
28	B. A. C. 7237	6	1 49	11 19	203	252	Star 5′.0	south of	☽'s	limb.	
Nov. 1	B. A. C. 81	6½	20 22	5 37	278	239	21 24	6 39	155	126	1 2
1	14 Ceti	6½	3 37	12 51	214	256	Star 6′.0	south of	☽'s	limb.	
2	B. A. C. 481	6½	7 24	16 34	287	339	8 17	17 26	121	171	0 52

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1873.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Nov. 8	47 Geminor.	6	0 41	9 27	6	314	Star 5′.7	north of	☽ 's	limb.	
10	B. A. C. 3138	6	7 53	16 31	228	190	9 20	17 58	84	94	1 27
15	*k* Virginis*	6	9 50	18 8	216	176	11 5	19 23	67	39	1 15
16	*m* Virginis‡	6	8 25	16 39	272	222	9 19	17 32	22	336	0 54
23	B. A. C. 6666	6	23 23	7 11	0	42	23 41	7 29	32	77	0 18
24	B. A. C. 7077	6	0 35	8 18	214	256	0 46	8 29	193	237	0 11
25	35 Capricorni	6	22 27	6 7	314	328	23 40	7 20	105	133	1 13
25	37 Capricor.*	6	2 51	10 31	339	30	3 31	11 11	73	126	0 40
27	ψ^3 Aquarii	5	1 9	8 41	10	38	1 43	9 15	65	98	0 34
Dec. 2	13 Tauri	5½	1 35	8 48	208	153	Star 4′.2	south of	☽ 's	limb.	
2	A¹ Tauri‡	4½	11 2	18 13	318	6	11 41	18 52	60	105	0 39
2	A² Tauri‡	6	11 11	18 22	296	344	11 58	19 9	82	125	0 47
3	B. A. C. 1518	6	7 58	15 6	187	245	Star 6′.8	south of	☽ 's	limb.	
3	*k* Tauri	5½	8 28	15 35	283	342	9 34	16 41	86	144	1 6
4	125 Tauri	6	22 41	5 45	264	214	23 30	6 34	125	71	0 49
6	*c* Geminor.	6	1 17	8 13	281	228	2 15	9 11	82	26	0 58
6	ω^1 Cancri	5	11 7	18 2	325	25	11 25	18 20	355	55	0 18
6	ω^2 Cancri	6½	11 20	18 15	256	315	12 27	19 22	63	121	1 7
9	42 Leonis	6	4 5	10 49	164	112	Star 4′.9	south of	☽ 's	limb.	
9	B. A. C. 3579	6	8 43	15 26	151	113	Star 1′.0	south of	☽ 's	limb.	
9	*i* Leonis	6	10 26	17 9	237	237	11 52	18 35	50	84	1 26
11	*b* Vriginis	6	10 41	17 16	208	185	12 2	18 37	71	74	1 21
12	γ Virg., *mult.*	2½	9 37	16 8	246	205	10 55	17 26	36	8	1 18
17	25 Scorpii	6	12 43	18 54	209	167	13 37	19 48	103	69	0 54
20	τ Sagittarii‡	3½	22 45	4 47	280	321	23 48	5 50	107	155	1 3
27	B. A. C. 481	6½	0 8	5 42	335	308	1 16	6 50	103	98	1 8
27	*o* Piscium	4	6 21	11 54	323	15	7 15	12 48	88	140	0 54
28	*o* Arietis*	6	9 32	15 1	267	316	10 20	15 49	126	171	0 48
31	125 Tauri	6	12 8	17 25	187	238	12 16	17 33	169	220	0 8

NOTES.—B. A. C., British Association Catalogue.
Rumk., Rumker's Catalogue.
Lal., Lalande's *Histoire Céleste Française.* Bailey, Ed.
* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

The *Angles of Position*, for the points of contact, are for *direct* vision, and are reckoned from the Moon's *North Point*, and from its *Vertex* towards the West For *inverted* image, add 180° to the angles given.

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
35 Capricorni	6	-1.98	-13.3	-21 44.9	1 0 32.7	- 2 1.6	+0.9601	.5899	+.1731	+69	+13
37 Capricorni	6	1.95	13.3	20 39.2	3 33.6	+ 0 52.1	+0.4101	.5871	.1797	+53	-20
ε Capricorni	4½	1.94	13.2	20 2.2	4 26.8	+ 1 43.3	-0.0378	.5867	.1820	+29	-44
κ Capricorni	5	1.91	13.1	19 26.9	6 40.1	+ 3 51.3	-0.2124	.5847	.1863	+21	-55
B. A. C. 7550	6	1.91	13.3	20 12.3	6 53.2	+ 4 3.9	+0.5770	.5845	.1887	+64	-11
29 Aquarii	6	1.81	13.1	17 34.7	14 41.9	+11 34.4	-0.5025	.5774	.2022	+ 8	-75
56 Aquarii	6	-1.66	-12.9	-15 14.2	2 2 19.2	- 1 14.3	-0.3654	.5675	+.2213	+17	-64
τ^1 Aqua., *mult.*	6	1.56	12.7	14 43.7	9 47.5	+ 5 57.9	+0.8211	.5609	.2316	+76	+ 2
τ^2 Aquarii	4	1.55	12.6	14 15.9	10 36.8	+ 6 45.4	+0.5490	.5599	.2326	+69	-13
74 Aquarii	6	1.53	12.0	12 17.7	12 18.9	+ 8 23.9	-1.0212	.5590	.2346	-19	-90
ψ^1 Aquarii	4½	1.42	11.3	9 46.9	22 13.3	- 6 3.0	-1.1655	.5508	.2447	-28	-90
ψ^2 Aquarii	4½	1.41	11.3	9 52.7	23 8.8	- 5 9.5	-0.8422	.5502	.2456	- 5	-90
ψ^3 Aquarii	5	-1.39	-11.5	-10 18.5	23 36.9	- 4 41.9	-0.2959	.5495	+.2460	+24	-59
B. A. C. 8214	6½	1.30	10.7	8 10.2	3 7 9.0	+ 2 34.7	-0.5721	.5445	.2516	+11	-79
B. A. C. 8274	6	1.23	10.3	7 5.3	13 9.2	+ 8 22.9	-0.1435	.5408	.2551	+33	-50
30 Piscium	5	1.15	10.0	6 43.4	19 25.8	- 9 32.9	+1.0977	.5369	.2577	+84	+19
33 Piscium	5	1.13	9.8	6 25.3	21 1.5	- 8 0.3	+1.2042	.5363	.2583	+84	+28
B. A. C. 17	6	1.11	9.6	5 57.4	23 22.7	- 5 43.8	+1.3428	.5349	.2590	+84	+43
B. A. C. 81	6½	-1.04	- 8.3	- 2 55.4	4 6 8.0	+ 0 48.5	+0.0110	.5320	+.2601	+42	-42
14 Ceti	6½	0.98	7.5	1 12.4	11 26.2	+ 5 56.5	-0.3647	.5298	.2603	+23	-63
15 Ceti	6½	0.97	7.5	- 1 12.3	12 40.3	+ 7 8.2	-0.0451	.5291	.2602	+40	-45
26 Ceti, *mult.*	6½	0.83	6.1	+ 0 41.0	5 1 11.0	- 4 44.7	+1.2671	.5259	.2582	+90	+33
29 Ceti	6½	0.81	5.8	1 19.6	3 13.5	- 2 45.9	+1.1321	.5254	.2576	+90	+22
33 Ceti	6	0.79	5.5	1 46.1	4 29.5	- 1 32.3	+1.0030	.5252	.2570	+90	+13
35 Ceti	6½	-0.78	- 5.5	+ 1 47.9	5 27.7	- 0 35.9	+1.2212	.5249	+.2567	+90	+29
f Piscium	5½	0.77	5.0	2 56.6	8 2.6	+ 1 54.2	+0.6995	.5246	.2560	+90	- 5
B. A. C. 408	6½	0.75	4.5	4 4.3	10 27.3	+ 4 14.4	+0.1468	.5243	.2545	+50	-34
μ Piscium	5	0.70	3.9	5 29.2	14 5.8	+ 7 46.0	-0.3964	.5240	.2528	+22	-64
B. A. C. 481	6½	0.69	3.2	6 59.6	16 59.6	+10 34.4	-1.2334	.5236	.2511	-31	+83
B. A. C. 728	6½	0.46	1.1	10 15.4	6 16 11.2	+ 9 2.8	+0.9763	.5249	.2322	+90	+14
31 Arietis	6	-0.39	- 0.1	+11 53.7	22 41.8	- 8 38.8	+0.7428	.5265	+.2253	+90	+ 1
σ Arietis	6	0.32	+ 0.9	14 33.4	7 5 54.1	- 1 40.1	-0.4771	.5282	.2166	+17	-64
B. A. C. 1096	5½	0.12	2.6	17 24.9	8 2 18.2	- 5 55.1	+0.6249	.5346	.1882	+86	- 1
13 Tauri	5½	-0.09	3.0	19 17.6	6 8.5	- 2 12.2	-0.6744	.5358	.1818	+ 6	-70
B A. C. 1242	6	0.00	3.4	19 50.6	14 57.2	+ 6 19.2	+0.2700	.5391	.1667	+58	-17
ω^2 Tauri	5½	+0.07	3.7	20 15.9	22 27.0	-10 25.8	+1.0167	.5421	.1527	+90	+27
53 Tauri	6	+0.08	+ 3.9	+20 50.1	23 26.2	- 9 28.7	+0.5534	.5425	+.1508	+80	- 1
56 Tauri	6	0.08	4.0	21 28.0	23 30.3	- 9 24.6	-0.1175	.5425	.1508	+36	-35
κ^1 Tauri	4½	0.10	4.2	22 0.1	9 2 8.5	- 6 51.7	-0.3046	.5432	.1459	+25	-45
κ^2 Tauri	6½	0.10	4.1	21 54.5	2 9.9	- 6 50.4	-0.2907	.5432	.1459	+31	-39
υ^1 Tauri	4½	0.11	4.3	22 31.5	2 33.6	- 6 27.4	-0.8076	.5435	.1447	- 3	-68
υ^2 Tauri	6	0.12	4.3	22 42.5	3 0.9	- 6 1.1	-0.9412	.5436	.1442	-13	-68
B. A. C 1373	6	+0.12	+ 4.1	+21 20.2	3 22.6	- 5 40.1	+0.5914	.5437	+.1431	+84	+ 2
τ Tauri	4½	0.18	4.4	22 42.7	9 52.0	+ 0 36.3	-0.0054	.5459	.1303	+42	-27
B. A. C. 1518	6	0.23	4.8	24 23.2	16 11.9	+ 6 43.3	-1.0373	.5479	.1173	-20	-66
99 Tauri	6	0.25	4.7	23 45.0	16 54.9	+ 7 24.8	-0.2626	.5483	.1156	+28	-39
103 Tauri	6	0.29	4.7	24 5.8	21 33.7	+11 54.0	-0.1261	.5495	.1053	+36	-32
118 Tauri	6	0.36	4.7	25 2.8	10 7 2.7	- 2 56.5	-0.2596	.5521	.0844	+27	-36
121 Tauri	6	+0.38	+ 4.5	+23 57.2	9 50.2	- 0 14.7	+1.1580	.5526	+.0779	+90	+47
125 Tauri	6	0.40	4.8	25 49.5	11 42.0	+ 1 33.2	-0.7418	.5530	.0740	0	-64
132 Tauri	5½	0.43	4.4	24 31.4	15 52.3	+ 5 34.8	+0.9658	.5537	.0639	+90	+33
139 Tauri	5½	0.46	4.5	25 56.2	19 50.0	+ 9 24.3	-0.3443	.5542	.0545	+23	-38
ε Geminorum	3½	0.59	3.8	25 15.3	11 16 16.5	+ 5 8.1	+1.0193	.5545	+.0057	+90	+42
37 Geminor.	6	+0.61	+ 3.6	+25 32.0	21 29.6	+10 1.7	+0.7118	.5539	-.0064	+90	+23

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—						At Conjunction in R. A.								Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Red'ns from 1873.0. Δδ	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x′	y′	N'n.	S'n.
		s	″	°	′	d	h	m	h	m				°	°
39 Geminor.	6½	+0.62	+3.6	+26	14.8	11	22	53.2	+11	31.1	−0.0871	.5539	−.0104	+37	−2
40 Geminor.	6½	0.62	3.6	26	5.1		23	10.9	+11	48.2	+0.0876	.5537	.0109	+47	−11
47 Geminor.	6	0.64	3.3	27	3.8	12	4	29.6	− 7	4.1	−1.0839	.5530	.0240	−27	−63
52 Geminor.	6	0.63	3.2	25	6.2		6	1.7	− 5	35.2	+1.0387	.5523	.0273	+90	+41
A Geminorum	5½	0.65	3.1	25	17.6		9	59.0	− 1	46.0	+0.7032	.5514	.0366	+90	+19
B. A. C. 2514	6½	0.65	2.7	24	30.5		17	6.6	+ 5	6.9	+1.2511	.5495	.0538	+90	+59
c Geminorum	6	+0.67	+2.5	+26	5.1		19	18.5	+ 7	14.3	−0.6143	.5490	−.0580	+ 7	−57
κ Gemi., *mult.*	3½	0.67	2.5	24	42.0		19	29.7	+ 7	25.1	+0.9049	.5488	.0588	+90	+29
ω¹ Cancri	6	0.67	2.1	25	44.3	13	3	1.0	− 9	18.9	−0.7480	.5461	.0753	− 1	−64
ω² Cancri	6½	0.67	2.1	25	26.2		3	23.7	− 8	56.9	−0.4424	.5459	.0765	+17	−47
ψ² Cancri	6	0.68	1.8	25	53.5		7	25.1	− 5	3.5	−1.2700	.5443	.0852	−51	−64
λ Cancri	6	0.67	1.6	24	25.2		12	8.3	− 0	29.8	−0.0660	.5415	.0948	+38	−27
υ¹ Cancri, *mult*	7	+0.67	+0.9	+24	56.9		14	59.8	+ 2	16.1	−0.9307	.5409	−.1008	−13	−65
υ² Cancri	6½	0.66	1.4	24	33.9		15	55.2	+ 3	9.6	−0.5996	.5404	.1027	+ 9	−59
υ³ Cancri	6	0.66	1.3	24	30.5		17	17.3	+ 4	29.1	−0.6781	.5400	.1033	+ 4	−64
32 Cancri	6	0.65	1.3	24	30.9		17	59.4	+ 5	9.8	−0.7622	.5395	.1069	− 1	−66
ξ Cancri	5	0.61	0.3	22	33.5	14	11	27.5	− 1	55.8	−0.7537	.5306	.1402	0	−68
79 Cancri	6	0.61	0.3	22	30.6		11	56.6	− 1	27.6	−0.7695	.5303	.1408	− 1	−68
B. A. C. 3138	6	+0.60	+0.3	+21	48.3		13	33.4	+ 0	6.2	−0.2155	.5293	−.1439	+30	−40
B. A. C. 3292	6½	0.56	−0.5	20	52.2	15	2	6.8	−11	43.8	−1.1128	.5229	.1642	−25	−69
η Leonis	3½	0.47	0.9	17	22.8		16	37.6	+ 2	20.8	+0.2280	.5150	.1851	+56	−22
42 Leonis	6	0.43	0.9	15	36.9	16	0	11.4	+ 9	41.3	+0.7554	.5116	.1944	+90	+ 5
B. A. C. 3579	6	0.40	1.0	14	59.5		3	51.5	−10	45.0	+0.7264	.5097	.1988	+90	+ 2
i Leonis	6	0.39	1.1	14	47.3		5	38.6	− 9	1.0	+0.5957	.5089	.2010	+82	− 5
k Leonis	6	+0.33	−1.5	+14	51.8		13	12.2	− 1	40.5	−1.0392	.5056	−.2088	−17	−75
ω Virginis	6	0.09	1.3	8	50.2	17	17	32.0	+ 1	51.7	−0.6204	.4968	.2316	+10	−78
ν Virginis	4½	0.06	1.1	7	14.4		21	37.3	+ 6	50.3	+0.1904	.4963	.2339	+53	−31
B. A. C. 3996	6	+0.04	0.9	5	54.0		23	25.8	+ 7	35.7	+1.2474	.4958	.2349	+90	+33
B. A. C. 4104	6½	−0.07	1.1	4	45.6	18	11	55.3	− 4	15.3	−0.4690	.4948	.2403	+18	−70
c Virginis	5	0.12	−1.1	+ 4	1.2		16	45.6	+ 0	27.1	−0.8219	.4947	−.2419	− 1	−86
46 Virginis	6	−0.34	+0.1	− 2	41.1	19	14	54.6	− 2	0.4	+1.1102	.4973	−.2448	+88	+29
48 Virginis	6	0.36	0.0	2	58.8		16	42.9	− 0	15.1	+0.9876	.4978	.2448	+87	+11
65 Virginis	6	0.46	−0.1	4	15.6	20	3	13.4	+ 9	57.8	−0.1908	.5008	.2434	+32	−53
66 Virginis	6	0.47	0.0	4	30.0		3	52.5	+10	35.8	−0.0891	.5013	.2433	+37	−47
*l*² Virginis	5	0.50	+0.1	5	36.0		7	51.1	− 9	32.5	+0.1338	.5030	.2423	+49	−35
80 Virginis	6	0.52	−0.2	4	44.9		9	44.8	− 7	42.0	−1.2431	.5040	.2419	−32	−90
B. A. C. 4647	6	−0.62	+0.1	− 7	25.9		19	58.5	+ 2	14.1	−0.8026	.5092	−.2379	− 2	−90
Mars				9	31.3		22	23.4	+ 4	34.8	+0.8666	.4933	.2304	+81	+ 4
94 Virginis	6	0.71	0.2	8	17.1	21	1	48.7	+ 7	53.9	−1.2644	.5125	.2347	−36	−90
95 Virginis	6	0.71	0.3	8	42.4		2	1.8	+ 8	6.7	−0.8646	.5126	.2346	− 6	−90
96 Virginis	6½	0.73	0.6	9	43.9		3	11.1	+ 9	14.0	−0.0387	.5134	.2340	+38	−44
κ Virginis	4½	0.76	0.5	9	40.9		5	10.1	+11	9.4	−0.5542	.5146	.2327	+11	−77
2 Libræ	6	−0.82	+0.6	−11	8.0		10	28.5	− 7	41.8	−0.2320	.5184	−.2290	+27	−55
5 Libræ	6	0.95	1.2	14	55.3		21	33.4	+ 3	2.5	+1.2954	.5270	.2195	+75	+40
μ Libræ	6	0.97	0.7	13	37.1		23	12.3	+ 4	38.3	−0.4424	.5280	.2180	+14	−69
α¹ Libræ	6	1.00	1.2	15	28.1		23	50.3	+ 5	15.1	+1.3718	.5288	.2173	+75	+58
ν¹ Libræ	6	1.08	0.8	15	45.8	22	7	25.7	−11	24.1	+0.0609	.5355	.2087	+39	−39
ν² Libræ	5½	1.08	0.9	15	59.4		7	30.9	−11	19.1	+0.2820	.5357	.2086	+51	−27
28 Libræ	6	−1.17	+0.9	−17	41.7		14	2.0	− 5	1.0	+0.7315	.5414	−.2005	+72	− 2
B. A. C. 5109	6	1.25	0.9	19	14.2		19	20.8	+ 0	7.2	+1.2891	.5461	.1931	+71	+43
41 Libræ	6	1.28	0.6	18	52.9		22	10.8	+ 2	51.3	+0.3785	.5493	.1888	+54	−22
κ Libræ	5	1.29	0.6	19	15.9		23	32.2	+ 4	10.0	+0.5223	.5514	.1861	+62	−14
λ Libræ	6	1.35	0.4	19	47.1	23	4	32.9	+ 9	0.2	+0.1461	.5560	.1781	+40	−34
B. A. C. 5281	6	−1.38	+0.4	−20	36.6		6	33.7	+10	56.6	+0.6439	.5581	−.1746	+67	− 7

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. $\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
β^1 Scorpii	2	-1.41	- 0.1	-19 27.4	23 9 47.8	- 9 56.3	-1.1036	.5614	-.1688	-32	-90
β^2 Scorpii	5½	1.41	- 0.1	19 27.1	9 48.0	- 9 56.1	-1.1079	.5614	.1688	-33	-90
ω^1 Scorpii	4	1.43	+ 0.1	20 19.4	10 22.0	- 9 23.3	-0.3049	.5623	.1674	+15	-61
ω^2 Scorpii	4½	1.43	0.2	20 31.4	10 36.9	- 9 8.8	-0.1397	.5623	.1672	+23	-51
B. A. C. 5395	6	1.46	+ 0.1	21 4.4	13 17.0	- 6 34.6	-0.0123	.5647	.1623	+29	-43
ω Ophiuchi	5	1.55	- 0.7	21 11.5	20 59.4	+ 0 50.7	-1.0765	.5728	.1462	-33	-90
18 Ophiuchi	6	-1.67	- 0.5	-24 24.9	24 4 5.6	+ 7 40.6	+1.2308	.5800	-.1301	+66	+41
22 Ophiuchi	6½	1.68	1.0	23 18.1	6 10.0	+ 9 40.3	-0.1667	.5821	.1250	+17	-52
24 Ophiuchi	6½	1.70	1.3	22 56.8	6 57.4	+10 25.8	-0.6250	.5828	.1231	- 7	-88
B. A. C. 5709	6	1.73	0.8	24 53.9	8 10.1	+11 35.6	+1.2106	.5840	.1201	+65	+38
26 Ophiuchi	6	1.73	0.9	24 47.6	8 14.7	+11 40.0	+1.0940	.5840	.1200	+65	+25
39 Ophiuchi	6	1.78	1.9	24 8.8	15 16.8	- 5 34.5	-0.3422	.5905	.1019	+ 6	-64
B. A. C. 5831	6	-1.77	- 1.9	-23 55.9	15 19.0	- 5 32.4	-0.5629	.5905	-.1018	- 6	-82
θ Ophiuchi	3½	1.79	1.8	24 52.2	16 48.7	- 4 6.4	+0.2366	.5921	.0974	+36	-29
b Ophiuchi	5	1.79	2.4	24 3.4	18 30.7	- 2 28.5	-0.7454	.5937	.0925	-17	-90
c^2 Ophiuchi	5	1.80	2.7	23 51.8	20 27.3	- 0 36.6	-1.1153	.5954	.0873	-43	-90
B. A. C. 5909	6½	1.84	2.1	26 10.2	20 31.6	- 0 32.5	+1.2025	.5954	.0870	+64	+39
63 Ophiuchi	6½	1.90	3.6	24 51.7	25 5 19.7	+ 7 53.7	-0.7702	.6020	.0621	-21	-90
B. A. C. 6194	6	-2.00	- 4.2	-27 5.3	13 52.6	- 7 55.0	+1.0351	.6077	-.0354	+63	+22
B. A. C. 6217	6½	1.97	4.9	24 58.5	15 12.3	- 6 38.7	-1.1112	.6083	.0315	-47	-90
γ Sagittarii	3	1.99	5.1	25 29.5	17 33.4	- 4 23.6	-0.6607	.6098	.0235	-18	-90
B. A. C. 6369	6	2.02	6.0	25 8.5	23 42.7	+ 1 29.9	-1.0899	.6123	.0037	-47	-90
φ Sagittarii	3½	2.05	5.6	27 7.2	23 57.9	+ 1 44.4	+0.8704	.6124	-.0031	+63	+ 9
τ Sagittarii	2½	2.08	6.3	26 27.2	26 3 28.0	+ 5 5.4	+0.2191	.6135	+.0088	+27	-30
B. A. C. 6490	6½	-2.05	- 6.8	-25 1.4	6 6.2	+ 7 36.7	-1.1614	.6145	+.0169	-52	-90
B. A. C. 6562	6½	2.08	7.1	26 7.2	9 57.9	+11 18.4	+0.0142	.6152	.0297	+18	-42
ψ Sagittarii	6	2.07	7.3	25 28.4	10 48.7	-11 53.0	-0.5972	.6152	.0327	-14	-86
56 Aquarii	6	1.73	12.9	15 14.2	29 12 26.8	+10 41.4	-0.1320	.5760	.2270	+30	-51
τ^1 Aqua., *mult.*	6	1.66	12.9	14 43.7	19 40.9	- 6 20.7	+0.9665	.5708	.2376	+76	+11
τ^2 Aquarii	6½	1.65	12.8	14 15.9	20 28.6	- 5 34.7	+0.7005	.5698	.2387	+76	- 5
74 Aquarii	6	-1.64	-12.4	-12 17.7	22 7.5	- 3 59.6	-0.8406	.5689	+.2407	- 7	-90
ψ^1 Aquarii	4½	1.56	12.0	9 47.0	30 7 41.6	+ 5 13.7	-0.9612	.5612	.2512	-13	-90
ψ^2 Aquarii	4½	1.55	12.0	9 52.8	8 35.2	+ 6 5.3	-0.6415	.5607	.2522	+ 6	-85
ψ^3 Aquarii	5	1.55	12.1	10 18.5	9 2.5	+ 6 31.7	-0.1037	.5604	.2525	+34	-48
B. A. C. 8214	6½	1.49	11.5	8 10.2	16 18.6	-10 27.6	-0.3607	.5554	.2581	+22	-63
B. A. C. 8274	6	-1.43	-11.1	- 7 5.3	22 5.9	- 4 52.5	+0.0710	.5513	+.2617	+45	-39
30 Piscium	5	1.38	10.9	6 43.4	31 4 10.9	+ 1 0.1	+1.3005	.5477	.2642	+84	+37
B. A. C. 81	6½	1.29	9.6	2 55.5	14 27.9	+10 56.2	+0.2482	.5420	.2663	+56	-29
14 Ceti	6½	1.25	8.9	1 12.4	19 34.7	- 8 7.2	-0.1139	.5396	.2663	+36	-48
15 Ceti	6½	-1.24	- 8.9	- 1 12.3	20 46.2	- 6 58.1	+0.2017	.5394	+.2663	+54	-32

FEBRUARY.

Name.	Mag.	$\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
29 Ceti	6½	-1.12	- 7.4	+ 1 19.5	1 10 49.6	- 7 22.2	+1.3737	.5343	+.2626	+90	+47
33 Ceti	6	1.11	7.3	1 46.0	12 3.0	+ 7 48.8	+1.2482	.5342	.2622	+90	+32
f Piscium	5½	1.08	6.9	2 56.6	15 29.2	+11 8.4	+0.9526	.5333	.2605	+90	+10
B. A. C. 408	6½	1.06	6.2	4 4.3	17 49.3	-10 36.0	+0.4101	.5327	.2592	+66	-21
μ Piscium	5	1.03	5.5	5 29.2	21 21.0	- 7 11.1	-0.1227	.5322	.2572	+36	-48
B. A. C. 481	6½	1.02	5.0	6 59.6	2 0 9.5	- 4 28.0	-0.9465	.5319	.2552	- 9	-83
ο Piscium	4	-0.98	- 4.1	+ 8 31.0	4 36.6	- 0 9.5	-1.3826	.5311	+.2519	-51	-82
B. A. C. 728	6½	0.80	2.2	10 15.4	22 43.8	- 6 37.1	+1.2377	.5309	.2347	+90	+35
31 Arietis	6	0.73	1.3	11 53.7	3 5 5.6	- 0 27.5	+1.0055	.5315	.2273	+90	+16
ο Arietis	6	0.71	- 0.2	14 46.3	8 50.8	+ 3 10.5	-1.1572	.5320	.2225	-26	-75
σ Arietis	6	0.67	0.0	14 33.4	12 9.3	+ 6 22.5	-0.2042	.5323	.2183	+32	-48
B. A. C. 1096	5½	0.45	+ 1.8	17 24.9	4 8 14.6	+ 1 48.8	+0.8748	.5365	.1880	+90	+13
13 Tauri	5½	-0.41	+ 2.6	+19 17.6	12 2.3	+ 5 29.0	-0.4194	.5375	+.1816	+19	-56

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 1242	6	−0.31	+3.1	+19 50.6	4 20 46.1	−10 4.5	+0.5100	.5399	+.1658	+76	− 5
A¹ Tauri	4½	0.30	3.9	21 44.0	22 22.6	− 8 31.2	−1.2468	.5404	.1626	−40	−68
A² Tauri	6	0.30	3.9	21 39.9	22 40.2	− 8 14.2	−1.1259	.5404	.1622	−26	−69
ω² Tauri	5½	0.21	3.5	20 15.9	5 4 12.9	− 2 52.6	+1.2454	.5419	.1520	+90	+48
53 Tauri	6	0.21	3.7	20 50.1	5 11.7	− 1 55.7	+0.7825	.5421	.1500	+90	+12
56 Tauri	6	0.21	4.0	21 28.0	5 15.8	− 1 51.8	+0.1141	.5422	.1491	+49	−23
κ¹ Tauri	4½	−0.18	+4.2	+22 0.1	7 53.2	+ 0 40.3	−0.0752	.5430	+.1445	+38	−32
κ² Tauri	6½	0.18	4.2	21 54.5	7 54.6	+ 0 41.6	+0.0282	.5430	.1445	+44	−27
υ¹ Tauri	4½	0.17	4.4	22 31.5	8 18.2	+ 1 4.5	−0.5770	.5430	.1440	+10	−61
υ² Tauri	6	0.17	4.4	22 42.5	8 45.4	+ 1 30.8	−0.7107	.5431	.1427	+ 3	−67
B. A. C. 1373	6	0.16	4.0	21 20.2	9 6.9	+ 1 51.6	+0.8156	.5431	.1421	+90	+15
τ Tauri	4½	−0.08	4.5	22 42.7	15 35.1	+ 8 6.7	+0.2124	.5450	.1286	+55	−16
B. A. C. 1518	6	0.00	+5.2	+24 23.2	21 54.3	− 9 46.9	−0.8260	.5465	+.1154	− 5	−66
99 Tauri	6	+0.01	5.1	23 45.0	22 37.3	−11 5.4	−0.0543	.5466	.1137	+40	−28
k Tauri	5½	0.01	5.4	24 51.2	22 44.9	− 8 58.1	−1.2348	.5466	.1135	−42	−65
103 Tauri	6	0.07	5.2	24 5.8	6 3 16.0	− 4 36.2	+0.0749	.5476	.1039	+47	−20
118 Tauri	6	0.19	5.4	25 2.8	12 45.7	+ 4 33.9	−0.0736	.5499	.0819	+38	−26
125 Tauri	6	0.25	5.7	25 49.5	17 25.7	+ 9 4.3	−0.5635	.5503	.0713	+10	−54
132 Tauri	5½	+0.29	+5.2	+24 31.4	26 36.9	−10 53.1	+1.1371	.5509	+.0617	+90	+46
139 Tauri	5½	0.35	5.5	25 56.2	7 1 35.5	− 7 2.8	−0.1804	.5513	.0523	+32	−29
ε Geminorum	3½	0.55	4.9	25 15.3	22 8.3	−11 12.1	+1.1468	.5513	+.0037	+90	+52
37 Geminor.	6	0.60	4.7	25 32.0	8 3 14.3	− 6 17.2	+0.8297	.5509	−.0083	+90	+29
39 Geminor.	6½	0.63	4.8	26 14.8	4 47.4	− 4 47.4	+0.0264	.5507	.0124	+44	−14
40 Geminor.	6½	0.63	4.8	26 5.1	5 5.2	− 4 30.1	+0.2008	.5502	.0129	+55	− 5
47 Geminor.	6	+0.69	+4.7	+27 3.9	10 25.9	+ 0 39.5	−0.9833	.5497	−.0259	−18	−63
52 Geminor.	6	0.68	4.2	25 6.2	11 58.5	+ 2 9.0	+1.1400	.5494	.0292	+90	+49
A Geminor.	5½	0.72	4.0	25 17.6	15 57.3	+ 5 59.7	+0.7956	.5485	.0385	+90	+24
c Geminorum	6	0.80	3.6	26 5.1	9 1 20.2	− 8 56.5	−0.5437	.5461	.0598	+12	−52
κ Gemi., *mult.*	3½	0.79	3.3	24 42.1	1 31.4	− 8 45.7	+0.9779	.5461	.0607	+90	+34
ω¹ Cancri	6	0.86	3.0	25 44.4	9 5.3	− 1 27.1	−0.6947	.5438	.0772	+ 3	−63
ω² Cancri	6½	+0.85	+3.0	+25 26.2	9 28.1	− 1 5.0	−0.3889	.5435	−.0783	+21	−44
ψ² Cancri	6	0.89	2.8	25 53.5	13 30.8	+ 2 49.7	−1.2269	.5421	.0871	−42	−64
λ Cancri	6	0.90	2.1	24 25.3	18 15.5	+ 7 24.9	−0.0314	.5403	.0967	+41	−25
υ¹ Cancri, *mult.*	7	0.78	3.9	24 56.9	21 7.8	+10 11.6	−0.9039	.5391	.1027	−11	−65
υ² Cancri	6½	0.93	1.9	24 33.9	22 3.5	+11 5.4	−0.5738	.5388	.1027	+10	−58
υ³ Cancri	6	0.93	1.8	24 30.5	23 25.9	−11 34.9	−0.6567	.5380	.1077	+ 5	−63
32 Cancri	6	+0.94	+1.8	+24 30.9	10 0 8.2	−10 53.9	−0.7418	.5379	−.1088	0	−64
ξ Cancri	5	0.96	0.3	22 33.5	17 40.1	+ 6 4.3	−0.7734	.5297	.1422	− 1	−68
79 Cancri	6	0.96	0.3	22 30.6	18 9.2	+ 6 32.4	−0.7899	.5295	.1429	− 2	−68
B. A. C. 3138	6	0.95	+0.1	21 48.3	19 46.3	+ 8 6.5	−0.2392	.5287	.1461	+29	−42
B. A. C. 3292	6½	0.97	−0.8	20 52.2	11 8 21.1	− 3 42.0	−1.1671	.5226	.1663	−30	−69
η Leonis	3½	0.94	2.1	17 22.8	22 52.6	+10 23.3	+0.1391	.5155	.1875	+50	−27
42 Leonis	6	+0.91	−2.6	+15 36.8	12 6 26.2	− 6 16.5	+0.6482	.5119	−.1972	+88	− 2
B. A. C. 3579	6	0.90	2.8	14 59.4	10 6.2	− 2 42.9	+0.6104	.5105	.2013	+83	− 5
i Leonis	6	0.90	2.9	14 47.2	11 53.2	− 0 59.0	+0.4762	.5097	.2035	+72	−12
k Leonis	6	0.89	3.5	14 51.8	19 26.5	+ 6 21.3	−1.1776	.5065	.2116	−27	−75
ω Virginis	6	0.74	4.7	8 50.1	13 23 44.5	+ 9 51.7	−0.8243	.4980	.2341	− 1	−81
ν Virginis	4½	0.72	4.7	7 14.4	14 3 49.8	−10 9.7	−0.0203	.4969	.2364	+41	−42
B. A. C. 3996	6	+0.70	−4.6	+ 5 53.9	5 38.3	− 8 24.2	+1.0337	.4968	−.2374	+90	+16
b Virginis	6	0.66	4.7	4 21.7	11 37.9	− 2 34.5	+1.2999	.4960	.2402	+90	+38
B. A. C. 4104	6½	0.63	5.0	4 45.6	18 8.1	+ 3 45.0	−0.7099	.4955	.2424	+ 5	−85
c Virginis	5	0.61	5.2	+ 4 1.1	22 58.8	+ 8 28.8	−1.0708	.4952	.2439	−17	−86
γ Virg., *mult.*	2½	0.50	4.7	− 0 45.2	15 10 48.8	− 4 1.6	+1.2779	.4956	.2459	+89	+34
B. A. C. 4277	6	+0.49	−4.7	− 0 52.7	11 51.4	− 3 0.7	+1.1580	.4956	−.2459	+89	+23

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Red'ns from 1873.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
46 Virginis	6	+0.43	−4.7	− 2 41.2	15 21 12.9	+ 6 5.4	+0.8331	.4967	−.2459	+88	+ 1
48 Virginis	6	0.42	4.7	2 58.8	23 1.9	+ 7 51.4	+0.7081	.4970	.2458	+87	− 6
65 Virginis	6	0.32	4.9	4 15.7	16 9 37.3	− 5 50.8	−0.4883	.4997	.2438	+17	−72
66 Virginis	6	0.32	4.8	4 30.1	10 16.7	− 5 12.6	−0.3868	.4998	.2437	+22	−65
l^3 Virginis	5	0.29	4.7	5 36.0	14 17.7	− 1 18.3	−0.1659	.5011	.2426	+33	−52
m Virginis	6	0.23	4.2	8 3.8	19 26.9	+ 3 42.1	+1.2636	.5031	.2406	+82	+33
B. A. C. 4647	6	+0.19	−4.6	− 7 26.0	17 2 33.8	+10 36.9	−1.1187	.5061	−.2373	−22	−90
95 Virginis	6	0.13	4.5	8 42.5	8 42.3	− 7 25.3	−1.1847	.5092	.2337	−28	−90
96 Virginis	6½	0.11	4.2	9 44.0	9 52.7	− 6 16.9	−0.3518	.5098	.2330	+22	−63
κ Virginis	4½	0.09	4.3	9 41.0	11 53.6	− 4 19.6	−0.8730	.5109	.2315	− 7	−90
2 Libræ	6	+0.03	4.1	11 8.0	17 17.5	+ 0 54.7	−0.5487	.5139	.2273	+11	−77
Mars				12 57.5	18 2 2.2	+ 9 23.7	−0.5473	.5084	.2156	+10	−77
5 Libræ	6	−0.09	−3.3	−14 55.4	4 35.5	+11 52.2	+0.9977	.5213	−.2175	+75	+13
μ Libræ	6	0.09	3.8	13 37.2	6 16.6	−10 29.8	−0.7617	.5224	.2159	− 3	−90
α^1 Libræ	6	0.11	3.3	15 28.1	6 55.3	− 9 52.3	+1.0750	.5230	.2152	+75	+19
α^2 Libræ	2½	0.11	3.3	15 30.8	7 1.0	− 9 46.8	+1.1020	.5230	.2150	+75	+21
ν^1 Libræ	6	0.18	3.5	15 45.8	14 41.3	− 2 20.8	−0.2497	.5288	.2064	+23	−57
ν^2 Libræ	5½	0.18	3.4	15 59.5	14 46.6	− 2 15.7	−0.0256	.5289	.2063	+34	−44
28 Libræ	6	−0.26	−3.1	−17 41.8	21 27.6	+ 4 12.3	+0.4337	.5342	−.1976	+58	−19
B. A. C. 5109	6	0.33	2.8	19 14.2	19 2 54.9	+ 9 28.9	+1.0037	.5388	.1900	+71	+15
41 Libræ	6	0.36	3.1	18 53.0	5 49.6	−11 42.2	+0.0820	.5414	.1856	+37	−38
κ Libræ	5	0.37	3.0	19 16.0	7 13.2	−10 21.4	+0.2292	.5422	.1836	+45	−30
λ Libræ	6	0.43	3.1	19 47.2	12 22.7	− 5 22.4	−0.1481	.5476	.1747	+24	−51
B. A. C. 5281	6	0.46	2.9	20 36.7	14 27.1	− 3 22.3	+0.3593	.5490	.1712	+50	−23
ω^1 Scorpii	4	−0.51	−3.2	−20 19.4	18 22.4	+ 0 24.9	−0.6001	.5527	−.1640	− 1	−84
ω^2 Scorpii	4½	0.51	3.1	20 31.5	18 37.8	+ 0 39.7	−0.4320	.5528	.1637	+ 8	−70
B. A. C. 5395	6	0.55	3.1	21 4.5	21 22.7	+ 3 18.8	−0.2997	.5556	.1584	+14	−60
ρ Ophi., *mult.*	5	0.62	2.6	23 9.2	20 2 29.3	+ 8 14.5	+1.0824	.5603	.1484	+67	+22
18 Ophiuchi	6	0.75	2.8	24 24.9	12 40.4	− 5 56.8	+0.9836	.5695	.1264	+66	+16
B. A. C. 5641	6½	0.76	2.7	24 36.8	13 20.5	− 5 18.2	+1.1043	.5696	.1253	+66	+25
22 Ophiuchi	6½	−0.77	−3.3	−23 18.1	14 49.1	− 3 52.9	−0.4340	.5713	−.1217	+ 3	−71
24 Ophiuchi	6½	0.77	3.5	22 56.8	15 38.0	− 3 5.8	−0.8985	.5721	.1195	−23	−90
B. A. C. 5709	6	0.80	2.9	24 54.0	16 53.2	− 1 53.5	+0.9689	.5729	.1167	+65	+15
26 Ophiuchi	6	0.80	2.9	24 47.6	16 57.9	− 1 49.0	+0.8511	.5731	.1163	+65	+ 7
39 Oph., *mult.*	6	0.89	3.6	24 8.8	21 0 14.5	+ 5 11.0	−0.5977	.5792	.0987	− 8	−87
B. A. C. 5831	6	0.88	3.7	23 55.9	0 16.8	+ 5 13.3	−0.8224	.5793	.0986	−21	−90
θ Ophiuchi	3½	−0.91	−3.5	−24 52.2	1 49.6	+ 6 42.4	−0.0066	.5808	−.0943	+22	−43
b Ophiuchi	5	0.92	3.9	24 3.4	3 35.1	+ 8 23.8	−1.0028	.5825	.0895	−33	−90
B. A. C. 5909	6½	0.96	3.4	26 10.2	5 40.1	+10 24.0	+0.9811	.5841	.0840	+64	+17
63 Ophiuchi	6½	1.05	4.5	24 51.6	14 46.3	− 4 51.6	−1.0074	.5907	.0589	−36	−90
B. A. C. 6194	6	1.17	4.3	27 5.2	23 36.4	+ 3 36.9	+0.8457	.5965	.0327	+63	+ 7
λ Sagittarii	3	1.20	5.2	25 29.4	22 3 24.5	+ 7 15.6	−0.8714	.5987	.0210	−31	−90
φ Sagittarii	3½	−1.28	−5.1	−27 7.2	10 1.2	−10 24.2	+0.6963	.6013	−.0011	+69	− 2
σ Sagittarii	2½	1.30	5.6	26 27.2	13 37.9	− 6 56.6	+0.0428	.6028	+.0105	+18	−40
B. A. C. 6562	6½	1.37	6.2	26 7.2	20 19.4	− 0 32.0	−0.1502	.6048	.0312	+ 9	−52
ψ Sagittarii	6	1.37	6.5	25 28.5	21 11.7	+ 0 18.2	−0.7663	.6048	.0341	−24	−90
B. A. C. 6666	6	1.43	6.4	27 14.7	23 2 28.1	+ 5 21.2	+1.2249	.6056	.0514	+63	+41
h^1 Sagittarii	6	1.43	7.1	24 59.8	4 47.9	+ 7 34.9	−0.8867	.6060	.0585	−28	−90
h^2 Sagittarii	4½	−1.42	−7.1	−25 9.8	5 2.6	+ 7 40.1	−0.7066	.6060	+.0591	−18	−90
ω Sagittarii	5	1.50	7.2	26 38.2	12 5.6	− 9 25.8	+1.2517	.6058	.0812	+64	+48
A Sagittarii	5	1.51	7.3	26 32.3	13 15.7	− 8 18.7	+1.2520	.6056	.0847	+64	+48
B. A. C. 7049	6	1.54	8.9	22 48.8	24 0 43.1	+ 2 39.8	−1.2569	.6031	.1198	−55	−90
17 Capricorni	6	1.56	9.4	21 58.6	6 59.1	+ 8 40.0	−1.2715	.6013	.1377	−55	−90
B. A. C. 7197	6	−1.57	−9.3	−23 12.0	7 47.6	+ 9 26.5	+0.0455	.6006	+.1401	+29	−40

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
χ Capricorni	6	-1.59	- 9.9	-21 42.3	24 15 29.6	- 7 10.6	-0.2643	.5990	+.1611	+15	-58
27 Capricorni	6	1.58	10.1	21 4.0	15 52.5	- 6 48.7	-0.8287	.5970	.1618	-15	-90
φ Capricorni	5½	1.60	10 1	21 10.8	18 12.7	- 4 34.2	-0.3333	.5961	.1678	+12	-63
B. A. C. 81	6½	1.46	9.8	2 55.4	28 1 4.9	- 0 38.6	+0.4274	.5485	.2718	+67	-21
14 Ceti	6½	1.43	9.3	1 12.4	6 3.5	+ 4 9.8	+0.0838	.5478	.2727	+47	-38
15 Ceti	6½	-1.43	- 9.3	- 1 12.3	7 13.1	+ 5 17.0	+0.3982	.5475	+.2726	+66	-22
MARCH.											
f Piscium	5½	-1.33	- 7.6	+ 2 56.6	1 1 22.3	- 1 10.4	+1.1773	.5425	+.2668	+90	+25
B. A. C. 408	6½	1.33	7.2	4 4.3	3 37.8	+ 1 0.6	+0.6477	.5421	.2656	+85	- 6
96 Piscium	6½	1.33	6.3	6 38.2	6 31.9	+ 3 48.8	-1.1631	.5416	.2638	-24	-84
μ Piscium	5	1.32	6.6	5 29.2	7 2.6	+ 4 18.5	+0.1294	.5415	.2635	+50	-35
B. A. C. 481	6½	1.32	6.0	6 59.6	9 45.6	+ 6 56.0	-0.6767	.5414	.2616	+ 7	-83
ο Piscium	4	1.30	5.4	8 31.0	14 3.6	+11 5.4	-1.0990	.5406	.2572	-19	-82
31 Arietis	6	-1.14	- 2.7	+11 53.7	2 13 42.5	+ 9 57.3	+1.2812	.5410	+.2322	+90	+40
ο Arietis	6	1.11	1.7	14 46.3	17 20.1	-10 32.3	-0.8451	.5414	.2275	- 3	-75
σ Arietis	6	1.07	1.4	14 33.4	20 31.9	- 7 27.0	+0.0955	.5415	.2225	+48	-32
53 Arietis	6	1.01	- 0.1	17 23.3	3 3 48.1	- 0 25.4	-1.2589	.5425	.2115	-37	-73
B. A. C. 1096	5½	0.86	+ 0.8	17 24.9	15 58.9	+11 20.8	+1.1668	.5440	.1909	+90	+35
13 Tauri	5½	0.83	1.6	19 17.5	19 39.8	- 9 5.8	-0.1088	.5453	.1841	+37	-38
B. A. C. 1143	6	-0.83	+ 2.1	+20 31.5	20 36.6	- 8 10.9	-1.2286	.5454	+.1824	-36	-70
B. A. C. 1242	6	0.73	2.3	19 50.6	4 4 8.7	- 0 54.2	+0.8078	.5468	.1682	+90	+12
A¹ Tauri	4½	0.73	3.1	21 44.0	5 42.7	+ 0 36.6	-0.9266	.5470	.1647	-10	-68
A² Tauri	6	0.73	3.1	21 39.9	5 59.8	+ 0 53.1	-0.8072	.5470	.1643	- 3	-69
53 Tauri	6	0.63	3.1	20 50.1	12 21.2	+ 7 1.5	+1.0755	.5483	.1516	+90	+32
56 Tauri	6	0.64	3.4	21 28.0	12 25.2	+ 7 5.3	+0.4154	.5487	.1509	+69	- 8
κ¹ Tauri	4½	-0.61	+ 3.7	+22 0.1	14 58.7	+ 9 33.5	+0.2272	.5488	+.1459	+56	-17
κ² Tauri	6½	0.61	3.7	21 54.5	15 0.1	+ 9 34.9	+0.3295	.5488	.1459	+63	-42
ν¹ Tauri	4½	0.60	3.9	22 31.5	15 23.1	+ 9 57.1	-0.2690	.5489	.1446	+28	-44
ν² Tauri	6	0.60	4.0	22 42.5	15 49.6	+10 22.6	-0.4012	.5489	.1440	+21	-50
B. A. C. 1373	6	0.58	3.5	21 20.2	16 10.6	+10 42.9	+1.1074	.5489	.1434	+90	+35
τ Tauri	4½	0.53	4.2	22 42.7	22 29.8	- 7 11.0	+0.5082	.5502	.1293	+77	- 1
B. A. C. 1518	6	-0.44	+ 5.1	+24 23.2	5 4 41.1	- 1 12.6	-0.5235	.5511	+.1157	+14	-55
99 Tauri	6	0.43	4.9	23 45.0	5 23.2	- 0 32.0	+0.2402	.5512	.1139	+57	-13
k Tauri	5½	0.44	5.3	24 51.2	5 30.7	- 0 24.7	-0.9290	.5512	.1137	-12	-65
103 Tauri	6	0.37	5.2	24 5.8	9 56.6	+ 3 51.9	+0.3653	.5518	.1038	+66	- 5
118 Tauri	6	0.24	5.7	25 2.8	19 16.5	-11 7.8	+0.2105	.5525	.0822	+55	-11
125 Tauri	6	0.18	6.2	25 49.5	23 52.4	- 6 41.6	-0.2797	.5527	.0710	+27	-36
139 Tauri	5½	-0.06	+ 6.3	+25 56.2	6 7 55.7	+ 1 4.8	+0.0924	.5530	+.0517	+48	-14
37 Geminor.	6	+0.28	5.8	25 32.0	7 9 21.8	+ 1 37.8	+1.0673	.5503	-.0105	+90	+45
39 Geminor.	6½	0.31	6.0	26 14.9	10 54.6	+ 3 7.3	+0.2652	.5501	.0138	+59	- 2
40 Geminor.	6½	0.31	6.0	26 5.2	11 12.3	+ 3 24.5	+0.4386	.5500	.0145	+72	+ 7
47 Geminor.	6	0.38	6.1	27 3.9	16 31.7	+ 8 32.9	-0.7489	.5488	.0274	- 1	-63
A Geminorum	5½	0.45	5.4	25 17.6	22 2.2	-10 8.0	+1.0160	.5473	.0400	+90	+38
c Geminorum	6	+0.55	+ 5.3	+26 5.1	8 7 24.4	- 1 4.9	-0.3342	.5444	-.0619	+24	-39
κ Gemi., *mult.*	3½	0.56	4.9	24 42.1	7 35.6	- 0 54.1	+1.1830	.5443	.0622	+90	+50
ω¹ Cancri	6	0.64	4.7	25 44.4	15 9.5	+ 6 24.5	-0.4975	.5418	.0788	+15	-50
ω² Cancri	6½	0.65	4.7	25 26.3	15 32.3	+ 6 46.6	-0.1935	.5414	.0798	+32	-32
ψ² Cancri	6	0.70	4.5	25 53.5	19 35.2	+10 41.5	-1.0368	.5399	.0886	-21	-64
λ Cancri	6	0.74	3.8	24 25.3	9 0 20.3	- 8 42.8	+0.1478	.5380	.0981	+51	-16
υ¹ Cancri, *mult.*	7	+0.78	+3.7	+24 56.9	3 12.9	- 5 55.8	-0.7284	.5368	-.1041	+ 1	-65
υ² Cancri	6½	0.78	3.6	24 33.9	4 8.6	- 5 2.0	-0.4013	.5365	.1061	+20	-47
υ³ Cancri	6	0.79	3.4	24 30.5	5 31.2	- 3 42.0	-0.4864	.5354	.1092	+15	-52
32 Cancri	6	0.81	3.5	24 31.0	6 13.6	- 3 1.0	-0.5727	.5354	.1102	+10	-58
ξ Cancri	5	+0.94	+1.6	+22 33.5	23 48.1	-10 0.3	-0.6396	.5274	-.1438	+ 7	-65

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MARCH.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Red'ns from 1873.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
79 Cancri	6	+0.94	+1.5	+22 30.6	10 0 17.3	- 9 32.0	-0.6575	.5272	-.1445	+ 6	-66
B. A. C. 3138	6	0.94	1.3	21 48.3	1 54.7	- 7 57.7	-0.1105	.5264	.1474	+37	-35
B. A. C. 3292	6½	1.02	+0.2	20 52.2	14 31.3	+ 4 15.6	-1.0651	.5204	.1685	-20	-69
η Leonis	3½	1.06	-1.4	17 22.8	11 5 4.5	- 5 37.3	+0.2059	.5143	.1894	+54	-24
42 Leonis	6	1.06	2.3	15 36.8	12 38.7	+ 1 43.5	+0.6961	.5109	.1992	+90	0
B. A. C. 3579	6	1.07	2.6	14 59.4	16 18.9	+ 5 17.4	+0.6492	.5096	.2034	+88	- 3
i Leonis	6	+1.06	-2.8	+14 47.2	18 5.9	+ 7 1.2	+0.5098	.5089	-.2056	+75	-11
k Leonis	6	1.09	3.4	14 51.8	12 1 39.2	- 9 38.6	-1.1598	.5061	.2139	-25	-75
ω Virginis	6	1.08	5.7	8 50.1	13 5 53.9	- 6 11.5	-0.8794	.4989	.2371	- 4	-81
ν Virginis	4½	1.07	6.0	7 14.3	9 58.3	- 2 13.8	-0.0872	.4981	.2394	+38	-46
B. A. C. 3996	6	1.05	6.1	5 53.9	11 46.4	- 0 28.7	+0.9605	.4980	.2404	+90	+10
b Virginis	6	1.04	6.4	4 21.6	15 44.5	+ 3 19.5	+1.2106	.4973	.2432	+90	+28
B. A. C. 4104	6½	+1.04	-6.8	+ 4 45.5	14 0 12.9	+11 37.3	-0.8111	.4969	-.2456	0	-66
c Virginis	5	1.02	7.0	+ 4 1.1	5 2.1	- 7 41.4	-1.1833	.4969	.2472	-25	-86
γ Virg., *mult.*	2½	0.97	7.3	- 0 45.3	16 48.1	+ 3 45.2	+1.1334	.4975	.2492	+89	+21
B. A. C. 4277	6	0.96	7.3	0 52.8	17 50.4	+ 4 45.8	+1.0111	.4975	.2492	+89	+12
k Virginis	6	0.93	7.6	3 7.7	15 2 37.7	-10 41.5	+1.2782	.4988	.2492	+87	+34
46 Virginis	6	0.94	7.6	2 41.2	3 8.7	-10 11.4	+0.6668	.4988	.2491	+86	- 8
48 Virginis	6	+0.93	-7.7	- 2 58.9	4 57.0	- 8 26.1	+0.5381	.4992	-.2490	+75	-15
65 Virginis	6	0.88	8.0	4 15.7	15 28.9	+ 1 48.2	-0.6767	.5019	.2469	+ 7	-88
66 Virginis	6	0.88	8.0	4 30.1	16 8.1	+ 2 26.2	-0.5781	.5020	.2468	+12	-79
*l*³ Virginis	5	0.86	8.0	5 36.1	20 7.9	+ 6 19.3	-0.3648	.5033	.2455	+23	-64
m Virginis	6	0.82	7.7	8 3.8	16 1 15.6	+11 18.2	+1.0554	.5050	.2433	+82	+16
B. A. C. 4647	6	0.80	8.0	7 26.1	8 20.8	- 5 48.7	-1.3394	.5072	.2403	-44	-90
96 Virginis	6½	+0.75	-7.8	- 9 44.0	15 38.3	+ 1 16.0	-0.5829	.5113	-.2352	+11	-80
κ Virginis	4½	0.75	7.8	9 41.0	17 39.0	+ 3 13.3	-1.1076	.5123	.2338	-22	-90
2 Libræ	6	0.71	7.7	11 8.1	23 2.3	+ 8 26.9	-0.7905	.5150	.2296	- 3	-90
5 Libræ	6	0.64	7.0	14 55.5	17 10 20.2	- 4 35.8	+0.7473	.5217	.2191	+74	- 3
μ Libræ	6	0.63	7.4	13 37.2	12 1.4	- 2 57.7	-1.0193	.5226	.2173	-19	-90
α¹ Libræ	6	0.62	6.9	15 28.2	12 40.3	- 2 20.0	+0.8228	.5232	.2164	+75	+ 2
α² Libræ	2½	+0.62	-6.9	-15 30.9	12 45.9	- 2 14.6	+0.8498	.5234	-.2164	+75	+ 3
Mars				14 31.9	17 26.5	+ 2 17.3	-1.2064	.5271	.2109	-35	-90
ν¹ Libræ	6	0.57	7.0	15 45.9	20 22.5	+ 5 7.6	-0.5129	.5285	.2072	+ 9	-76
ν² Libræ	5½	0.57	7.0	15 59.6	20 32.9	+ 5 18.0	-0.2879	.5286	.2071	+22	-60
28 Libræ	6	0.52	6.6	17 41.9	18 3 15.7	+11 47.9	+0.1692	.5332	.1984	+43	-33
B. A. C. 5109	6	0.47	6.2	19 14.3	8 45.2	- 6 53.3	+0.7401	.5373	.1905	+70	- 2
41 Libræ	6	+0.45	-6.4	-18 53.0	11 41.2	- 4 3.1	-0.1884	.5396	-.1857	+23	-54
κ Libræ	5	0.44	6.3	19 16.0	13 5.5	- 2 41.6	-0.0408	.5406	.1835	+31	-45
λ Libræ	6	0.39	6.1	19 47.2	18 17.9	+ 2 20.3	-0.4222	.5445	.1750	+10	-69
B. A. C. 5281	6	0.38	5.9	20 36.7	20 23.7	+ 4 21.7	+0.0887	.5465	.1709	+36	-38
ω¹ Scorpii	4	0.34	6.0	20 19.5	19 0 21.8	+ 8 11.7	-0.8790	.5490	.1641	-17	-90
ω² Scorpii	4½	0.34	5.9	20 31.5	0 37.4	+ 8 26.8	-0.7099	.5497	.1633	- 7	-90
B. A. C. 5395	6	+0.31	-5.8	-21 4.5	3 24.5	+11 8.1	-0.5766	.5521	-.1579	0	-82
ρ Ophi., *mult.*	5	0.26	5.1	23 9.2	8 35.3	- 7 52.1	+0.8183	.5562	.1477	+67	+ 3
18 Ophiuchi	6	0.15	5.0	24 24.9	18 56.8	+ 2 7.1	+0.7218	.5638	.1255	+66	- 2
B. A. C. 5641	6½	0.15	4.9	24 36.8	19 37.6	+ 2 46.4	+0.8439	.5647	.1237	+66	+ 6
22 Ophiuchi	6½	0.14	5.2	23 18.2	21 7.9	+ 4 13.4	-0.7109	.5656	.1205	-12	-90
24 Ophiuchi	6½	0.13	5.4	22 56.9	21 57.8	+ 5 1.5	-1.1809	.5662	.1185	-45	-90
B. A. C. 5709	6	+0.11	-4.8	-24 54.0	23 14.5	+ 6 15.3	+0.7089	.5671	-.1157	+65	- 3
26 Ophiuchi	6	0.11	4.8	24 47.7	23 19.3	+ 6 19.9	+0.5898	.5672	.1155	+59	-10
39 Oph., *mult.*	6	0.03	5.1	24 8.8	20 6 45.2	-10 30.9	-0.8738	.5719	.0970	-24	-90
B. A. C. 5831	6	0.03	5.2	23 55.9	6 47.6	-10 28.5	-1.1013	.5727	.0963	-40	-90
θ Ophiuchi	3½	+0.01	4.9	24 52.3	8 22.5	- 8 57.2	-0.2743	.5740	.0926	+ 9	-69
b Ophiuchi	5	-0.01	-5.1	-24 3.4	10 10.5	- 7 13.3	-1.2826	.5749	-.0885	-63	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MARCH.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 5909	6½	-0.03	-4.4	-26 10.3	20 12 18.5	- 5 10.2	+0.7293	.5764	-.0829	+64	- 1
B. A. C. 6024	6½	0.12	4.3	27 1.1	19 47.0	+ 2 1.1	+1.0588	.5812	.0626	+63	+23
B. A. C. 6194	6	0.25	4.3	27 5.3	21 6 44.2	-11 27.7	+0.6066	.5869	.0316	+54	- 8
λ Sagiittarii	3	0.30	4.9	25 29.5	10 39.2	- 7 42.0	-1.1342	.5886	-.0202	-50	-90
φ Sagittarii	3½	0.37	4.4	27 7.2	17 28.6	- 1 9.1	+0.4658	.5911	+.0001	+41	-16
σ Sagittarii	2½	0.42	4.8	26 27.2	21 12.3	+ 2 25.5	-0.1950	.5920	.0109	+ 5	-55
B. A. C. 6562	6½	-0.51	-4.9	-26 7.2	22 4 7.4	+ 9 3.7	-0.3835	.5933	+.0319	- 3	-68
ψ Sagittarii	6	0.52	5.2	25 28.5	5 1.5	+ 9 55.7	-1.0090	.5935	.0347	-38	-90
B. A. C. 6666	6	0.58	4.6	27 14.7	10 29.0	- 8 50.2	+1.0231	.5939	.0516	+63	+20
h¹ Sagittarii	6	0.61	5.5	24 59.8	12 53.7	- 6 31.4	-1.1220	.5942	.0586	-45	-90
h² Sagittarii	4½	0.61	5.4	25 9.8	13 8.9	- 6 16.9	-0.9382	.5942	.0592	-31	-90
ω Sagittarii	5	0.68	5.2	26 38.1	20 27.0	+ 0 43.5	+1.0639	.5939	.0816	+64	+24
A Sagittarii	5	-0.72	-5.3	-26 32.3	21 39.6	+ 1 53.1	+1.0659	.5936	+.0849	+64	+24
B. A. C. 7077	6	0.85	5.8	25 22.4	23 10 46.9	- 9 31.6	+1.2505	.5910	.1226	+65	+44
B. A. C. 7197	6	0.91	6.5	23 12.0	16 51.3	- 3 41.8	-0.1307	.5890	.1392	+20	-51
B. A. C. 7237	6	0.92	6.3	24 15.5	18 39.5	- 1 58.0	+1.1828	.5886	.1441	+66	+33
χ Capricorni	6	0.98	7.2	21 42.3	24 0 49.3	+ 3 57.1	-0.4311	.5861	.1599	+ 7	-70
27 Capricorni	6	0.98	7.4	21 4.0	1 13.1	+ 4 19.9	-1.0035	.5861	.1607	-26	-90
φ Capricorni	5½	-1.01	-7.3	-21 10.7	3 38.0	+ 6 39.2	-0.4948	.5848	+.1672	+ 4	-75
33 Capricorni	5½	1.03	7.3	21 23.5	7 1.6	+ 9 54.8	+0.2975	.5833	.1749	+46	-26
35 Capricorni	6	1.04	7.2	21 44.8	8 15.5	+11 5.8	+0.8672	.5829	.1779	+68	+ 6
37 Capricorni	6	1.07	7.5	20 39.1	11 19.5	- 9 57.4	+0.3349	.5813	.1848	+49	-25
ε Capricorni	4½	1.08	7.7	20 2.1	12 13.6	- 9 5.4	-0.1088	.5809	.1868	+26	-49
κ Capricorni	5	1.09	7.9	19 26.8	14 28.6	- 6 55.6	-0.2674	.5797	.1923	+19	-59
B. A. C. 7550	6	-1.09	-7.6	-20 12.2	14 41.9	- 6 42.8	+0.5265	.5797	+.1927	+61	-14
29 Aqua., *mult.*	6	1.12	8.3	17 34.7	22 34.1	+ 0 51.3	-0.4960	.5753	.2090	+ 9	-75
56 Aquarii	6	1.19	8.7	15 14.2	25 10 8.7	+11 59.8	-0.2685	.5695	.2297	+23	-58
τ¹ Aqua., *mult.*	6	1.23	8.6	14 43.7	17 30.5	- 4 54.6	+0.9636	.5656	.2413	+76	+10
τ² Aquarii	4	1.23	8.7	14 15.8	18 18.8	- 4 8.0	+0.7005	.5653	.2422	+76	- 6
74 Aquarii	6	1.24	9.2	12 17.6	19 58.9	- 2 31.7	-0.8387	.5644	.2446	- 6	-90
ψ¹ Aquarii	4½	-1.30	-9.2	- 9 46.9	26 5 37.4	+ 6 46.0	-0.9018	.5599	+.2563	- 8	-90
ψ² Aquarii	4½	1.30	9.1	9 52.7	6 32.4	+ 7 39.0	-0.5713	.5594	.2573	+10	-79
ψ³ Aquarii	5	1.30	9.1	-10 18.4	6 59.6	+ 8 5.2	-0.0312	.5592	.2576	+39	-45
ο Arietis	6	1.38	2.5	+14 46.3	30 3 31.2	+ 1 26.9	-0.6501	.5485	.2318	+ 8	-74
σ Arietis	6	1.36	2.4	14 33.4	6 38.3	+ 4 27.5	+0.2858	.5492	.2273	+61	-22
53 Arietis	6	-1.32	-1.2	+17 23.3	13 43.5	+11 18.1	-1.0435	.5502	+.2160	-17	-73
13 Tauri	5½	1.22	+0.7	19 17.5	31 5 9.2	+ 2 11.6	+0.1121	.5533	.1883	+49	-27
B. A. C 1143	6	1.21	1.0	20 31.4	6 4.4	+ 3 4.8	-0.9929	.5537	.1865	-14	-70
B A. C. 1242	6	1.17	1.5	19 50.6	13 23.6	+10 8.6	+1.0252	.5554	.1708	+90	+26
A¹ Tauri	4½	1.16	2.1	21 44.0	14 54.9	+11 36.7	-0.6871	.5556	.1683	+ 5	-68
A² Tauri	6	-1.16	+2.0	+21 39.9	15 11.4	+11 52.6	-0.5694	.5556	+.1682	+12	-62
53 Tauri	6	1.08	2.3	20 50.0	21 21.9	- 6 9.9	+1.2954	.5568	.1540	+90	+55
56 Tauri	6	1.08	2.5	21 27.9	21 25.8	- 6 6.2	+0.6434	.5568	.1540	+90	+ 4
κ¹ Tauri	4½	1.05	2.8	22 0.1	23 54.9	- 3 42.4	+0.4594	.5571	.1488	+72	- 5
κ² Tauri	6½	-1.06	+2.7	+21 54.5	23 56.3	- 3 41.0	+0.5601	.5571	+.1487	+81	0

APRIL.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
υ¹ Tauri	4½	-1.05	+3.0	+22 31.4	1 0 18.6	- 3 19.5	-0.0307	.5571	+.1481	+41	-30
υ² Tauri	6	1.05	3.1	22 42.5	0 44.4	- 2 54.6	-0.1610	.5573	.1468	+34	-37
τ Tauri	4½	0.98	3.5	22 42.7	7 13.2	+ 3 20.3	+0.7408	.5582	.1323	+90	+12
B. A. C. 1518	6	0.92	4.4	24 23.2	13 14.1	+ 9 8.3	-0.2757	.5590	.1182	+27	-40
99 Tauri	6	0.91	4.3	23 45.0	13 55.1	+ 9 47.8	+0.4792	.5590	.1163	+75	- 1
k Tauri	5½	0.92	4.6	24 51.2	14 2.3	+ 9 54.7	-0.6761	.5590	.1161	+ 5	-64
103 Tauri	6	-0.84	+4.7	+24 5.8	18 21.0	- 9 55.8	+0.6942	.5594	+.1062	+87	+ 7

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
118 Tauri	6	-0.73	+5.5	+25 2.8	2 3 26.2	- 1 10.2	+0.4535	.5596	+.0829	+73	+ 1
125 Tauri	6	0.68	6.0	25 49.5	7 55.0	+ 3 8.8	-0.0306	.5596	.0720	+41	-23
139 Tauri	5½	0.56	6.4	25 56.2	15 46.8	+10 43.7	+0.3378	.5590	+.0521	+64	- 2
39 Geminor.	6½	0.18	6.8	26 14.9	3 18 13.4	-11 46.3	+0.5047	.5536	-.0141	+77	+10
40 Geminor.	6½	0.18	6.8	26 5.2	18 30.8	-11 29.4	+0.6765	.5535	.0153	+90	+20
47 Geminor.	6	0.09	7.2	27 3.9	23 45.1	- 6 26.1	-0.5036	.5518	.0279	+14	-46
A Geminorum	5½	-0.02	+6.5	+25 17.6	4 5 10.9	- 1 11.6	+1.2462	.5499	-.0404	+90	+59
υ Geminorum	4½	+0.07	7.1	27 10.7	10 42.6	+ 4 8.6	-1.0789	.5475	.0541	-25	-63
c Geminorum	6	0.12	6.6	26 5.2	14 26.2	+ 7 44.5	-0.0996	.5460	.0628	+37	-25
ω^1 Cancri	6	0.22	6.3	25 44.4	22 6.6	- 8 50.7	-0.2670	.5426	.0798	+28	-36
ω^2 Cancri	6½	0.23	6.2	25 26.3	22 29.2	- 8 28.9	+0.0351	.5424	.0809	+45	-20
ψ^1 Cancri	6½	0.30	6.3	26 13.1	5 2 22.8	- 4 43.1	-1.1548	.5404	.0895	-32	-64
ψ^2 Cancri	6	+0.29	+6.2	+25 53.5	2 30.0	- 4 36.1	-0.8068	.5404	-.0897	- 4	-64
λ Cancri	6	0.34	5.5	24 25.3	7 13.0	- 0 2.6	+0.3683	.5383	.0992	+66	- 5
υ^1 Cancri, *mult*	7	0.38	5.5	24 56.9	10 8.8	+ 2 47.6	-0.5136	.5367	.1053	+14	-53
υ^2 Cancri	6½	0.39	5.4	24 33.9	10 59.9	+ 3 36.9	-0.1813	.5363	.1072	+33	-34
υ^3 Cancri	6	0.41	5.3	24 30.5	12 22.0	+ 4 56.3	-0.2673	.5354	.1104	+28	-39
32 Cancri	6	0.42	5.3	24 31.0	13 4.2	+ 5 37.1	-0.3539	.5354	.1113	+23	-44
ξ Cancri	5	+0.63	+3.6	+22 33.5	6 6 34.8	- 1 26.0	-0.4382	.5261	-.1448	+19	-53
79 Cancri	6	0.63	3.6	22 30.7	7 3.9	- 0 57.8	-0.4562	.5260	.1454	+18	-54
B. A. C. 3138	6	0.65	3.3	21 48.3	8 41.1	+ 0 36.4	+0.0871	.5251	.1485	+48	-25
B. A. C. 3292	6½	0.77	2.1	20 52.2	21 17.2	-11 10.9	-0.8806	.5189	.1690	- 7	-69
η Leonis	3½	0.87	+0.1	17 22.9	7 11 51.1	+ 2 56.8	+0.3682	.5122	.1904	+65	-16
42 Leonis	6	0.89	-0.8	15 36.9	19 25.9	+10 18.2	+0.8462	.5089	.2002	+90	+ 9
B. A. C. 3579	6	+0.92	-1.3	+14 59.5	23 6.4	-10 7.7	+0.7936	.5077	-.2045	+90	+ 5
i Leonis	6	0.93	1.4	14 47.3	8 0 53.6	- 8 23.6	+0.6515	.5069	.2066	+88	- 3
k Leonis	6	0.99	1.9	14 51.8	8 27.6	- 1 2.7	-1.0280	.5042	.2150	-15	-75
ω Virginis	6	1.10	5.0	8 50.1	9 12 43.6	+ 2 25.8	-0.7984	.4979	.2386	+ 1	-70
ν Virginis	4½	1.10	5.5	7 14.4	16 47.8	+ 6 23.3	-0.0159	.4974	.2410	+42	-42
B. A. C. 3996	6	1.12	5.8	5 53.9	18 35.7	+ 8 8.2	+1.0257	.4972	.2420	+90	+14
b Virginis	6	+1.14	-6.4	+ 4 21.6	10 0 33.2	-10 4.3	+1.2633	.4969	-.2451	+90	+33
B. A. C. 4104	6½	1.14	6.7	4 45.6	7 0.6	- 3 47.5	-0.7656	.4969	.2476	+ 3	-80
c Virginis	5	1.16	7.1	+ 4 1.1	11 48.9	+ 0 52.9	-1.1455	.4970	.2492	-22	-86
γ Virg., *mult.*	2½	1.16	8.1	- 0 45.3	23 31.7	-11 43.6	+1.1395	.4984	.2516	+89	+21
B. A. C. 4277	6	1.16	8.2	0 52.8	11 0 33.6	-10 43.5	+1.0158	.4985	.2517	+89	+12
k Virginis	6	1.17	8.7	3 7.7	9 17.6	- 2 14.0	+1.2639	.5003	.2519	+87	+32
46 Virginis	6	+1.18	-8.6	- 2 41.2	9 48.4	- 1 44.1	+0.6543	.5005	-.2519	+85	- 9
48 Virginis	6	1.19	8.6	2 58.9	11 35.9	+ 0 0.3	+0.5225	.5010	.2518	+74	-16
65 Virginis	6	1.19	9.3	4 15.7	22 2.6	+10 9.3	-0.7086	.5041	.2500	+ 5	-90
66 Virginis	6	1.19	9.3	4 30.1	22 41.5	+10 47.1	-0.6100	.5043	.2498	+11	-82
l^2 Virginis	5	1.19	9.4	5 36.1	12 2 39.0	- 9 22.1	-0.4051	.5057	.2485	+21	-66
m Virginis	6	1.19	9.5	8 3.8	7 43.7	- 4 26.2	+0.9991	.5079	.2467	+82	+11
B. A. C. 4591	6	+1.19	-9.6	- 9 4.5	10 39.4	- 1 35.5	+1.3687	.5091	-.2452	+81	+47
96 Virginis	6½	1.18	9.6	9 44.1	21 56.9	+ 9 22.1	-0.6558	.5146	.2386	+ 6	-87
κ Virginis	4½	1.18	9.7	9 41.1	23 56.2	+11 17.9	-1.1811	.5157	.2371	-28	-90
2 Libræ	6	1.17	9.6	11 8.1	13 5 15.7	- 7 32.2	-0.8740	.5183	.2329	- 7	-90
5 Libræ	6	1.16	9.5	14 55.5	16 25.2	+ 3 16.8	+0.6402	.5259	.2221	+73	- 9
MARS				13 59.7	16 37.9	+ 3 29.1	-0.4024	.5294	.2255	+17	-67
μ Libræ	6	+1.15	-9.5	-13 37.3	18 5.1	+ 4 53.5	-1.1210	.5269	-.2204	-26	[illegible]
α^1 Libræ	6	1.15	9.3	15 28.2	18 43.5	+ 5 30.7	+0.7122	.5271	.2196	+75	- 5
α^2 Libræ	2½	1.15	9.3	15 30.9	18 49.1	+ 5 36.1	+0.7391	.5272	.2195	+75	- 3
ν^1 Libræ	6	1.14	9.3	15 45.9	14 2 24.9	-11 2.6	-0.6279	.5330	.2102	+ 3	-86
ν^2 Libræ	5½	1.14	9.3	15 59.6	2 30.3	-10 57.2	-0.4041	.5331	.2098	+15	-68
28 Libræ	6	+1.13	-8.9	-17 41.9	9 8.2	- 4 32.2	+0.0436	.5372	-.2012	+37	-41

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 5109	6	+1.11	-8.8	-19 14.3	14 14 33.8	+ 0 42.6	+0.6067	.5412	-.1934	+67	-10
41 Libræ	6	1.10	8.7	18 53.1	17 27.9	+ 3 30.9	-0.3234	.5436	.1881	+17	-62
κ Libræ	5	1.09	8.5	19 16.1	18 51.3	+ 4 51.4	-0.1761	.5445	.1860	+24	-53
λ Libræ	6	1.08	8.3	19 47.3	15 0 0.3	+ 9 49.9	-0.5614	.5481	.1771	+ 3	-81
B. A. C. 5281	6	1.07	8.1	20 36.8	2 4.8	+11 50.2	-0.0539	.5497	.1734	+28	-46
ω¹ Scorpii	4	1.04	8.1	20 19.5	6 0.5	- 8 22.3	-1.0228	.5528	.1660	-26	-90
ω² Scorpii	4½	+1.05	-8.1	-20 31.5	6 15.9	- 8 7.4	-0.8539	.5528	-.1656	-15	-90
B. A. C. 5395	6	1.04	7.9	21 4.6	9 1.6	- 5 27.5	-0.7236	.5550	.1601	- 8	-90
ρ Ophi., *mult.*	5	1.02	7.2	23 9.2	14 9.8	- 0 30 2	+0.6648	.5590	.1497	+66	- 6
18 Ophiuchi	6	0.97	6.4	24 25.0	16 0 27.1	+ 9 24.8	+0.5630	.5664	.1264	+58	-11
B. A. C. 5641	6½	0.97	6.4	24 36.9	1 7.7	+10 3.9	+0.6850	.5666	.1252	+65	- 5
22 Ophiuchi	6½	0.94	6.8	23 18.2	2 37.5	+11 30.4	-0.8708	.5678	.1215	-21	-90
B. A. C. 5709	6	+0.94	-6.1	-24 54.0	4 43.5	-10 28.3	+0.5480	.5692	-.1164	+56	-12
26 Ophiuchi	6	0.94	6.2	24 47.7	4 48.3	-10 23.7	+0.4288	.5692	.1163	+49	-19
39 Oph., *mult.*	6	0.87	6.1	24 8.9	12 12.8	- 3 15.9	-1.0392	.5737	.0981	-35	-90
B. A. C. 5831	6	0.87	6.2	23 56.0	12 15.1	- 3 13.7	-1.2674	.5737	.0980	-58	-90
θ Ophiuchi	3½	0.87	5.9	24 52.3	13 49.8	- 1 42.5	-0.4400	.5749	.0937	0	-72
B. A. C. 5909	6½	0.84	5.3	26 10.3	17 45.6	+ 2 4.3	+0.5639	.5770	.0834	+54	-12
B. A. C. 6024	6½	+0.78	-4.6	-27 1.1	17 1 14.5	+ 9 15.8	+0.8933	.5809	-.0634	+63	+10
B. A. C. 6194	6	0.66	4.2	27 5.2	12 14.3	- 4 10.3	+0.4383	.5853	.0322	+42	-18
φ Sagittarii	3½	0.54	3.6	27 7.2	23 3.9	+ 6 13.6	+0.2967	.5882	-.0002	+31	-26
σ Sagittarii	2½	0.49	3.7	26 27.2	18 2 50.1	+ 9 50.7	-0.3685	.5887	+.0111	- 4	-67
τ Sagittarii	3½	0.44	3.1	27 51.3	7 21.4	- 9 48.8	+1.1511	.5890	.0241	+62	+33
B. A. C. 6562	6½	0.40	3.5	26 7.2	9 50.5	- 7 25.7	-0.5585	.5891	.0319	-12	-83
ψ Sagittarii	6	+0.37	-3.7	-25 28.4	10 45.3	- 6 33.2	-1.1893	.5891	+.0347	-53	-90
B. A. C. 6666	6	0.34	2.8	27 14.7	16 18.0	- 1 13.7	+0.8618	.5890	.0505	+63	+ 8
h² Sagittarii	4½	0.28	3.4	25 9.7	19 0.6	+ 1 22.2	-1.1179	.5886	.0590	-45	-90
ω Sagittarii	5	0.21	2.6	26 38.1	19 2 27.1	+ 8 30.9	+0.9066	.5874	.0811	+64	+11
A Sagittarii	5	0.19	2.6	26 32.3	3 41.2	+ 9 42.1	+0.9089	.5870	.0843	+64	+11
B A. C. 7077	6	+0.02	2.5	25 22.3	17 6.7	- 1 24.4	+1.1031	.5832	.1213	+65	+26
B. A. C. 7197	6	-0.07	-3.1	-23 11.9	23 20.7	+ 4 35.1	-0.2929	.5805	+.1374	-11	-61
B. A. C. 7237	6	0.09	2.6	24 15.5	20 1 11.8	+ 6 21.8	+1.0392	.5798	.1423	+66	+20
χ Capricorni	6	0.17	3.3	21 42.2	7 32.2	-11 32.4	-0.5931	.5768	.1583	- 2	-84
27 Capricorni	6	0.17	3.5	21 3.9	7 56.7	-11 8.9	-1.1733	.5765	.1591	-40	-90
φ Capricorni	5½	0.20	3.4	21 10.7	10 25.8	- 8 45.5	-0.6557	.5752	.1652	- 4	-90
33 Capricorni	5½	0.25	3.2	21 23.4	13 55.6	- 5 23.6	+0.1504	.5736	.1730	+38	-35
35 Capricorni	6	-0.26	-3.0	-21 44.7	15 11.8	- 4 10.3	+0.7291	.5731	+.1757	+68	- 3
37 Capricorni	6	0.30	3.3	20 39.0	18 21.5	- 1 7.7	+0.1917	.5716	.1825	+41	-32
ε Capricorni	4½	0.31	3.5	20 2.1	19 17.3	- 0 14.1	-0.2579	.5711	.1846	+19	-58
κ Capricorni	5	0.35	3.6	19 26.7	21 36.7	+ 2 0.0	-0.4171	.5696	.1898	+11	-69
B. A. C. 7550	6	0.35	3.4	20 12.1	21 50.4	+ 2 13.3	+0.3890	.5695	.1902	+54	-22
29 Aqua., *mult.*	6	0.44	4.0	17 34.6	21 5 58.0	+10 2.8	-0.6418	.5653	.2062	+ 1	-88
56 Aquarii	6	-0.57	-4.3	-15 14.1	17 55.9	- 2 25.3	-0.3984	.5591	+.2269	+16	-67
τ¹ Aqua., *mult.*	6	0.66	4.3	14 43.6	22 1 32.5	+ 4 55.0	+0.8614	.5554	.2382	+76	+ 4
τ² Aquarii	4	0.67	4.4	14 15.8	2 22.5	+ 5 43.2	+0.5952	.5549	.2394	+72	-11
74 Aquarii	6	0.69	4.8	12 17.6	4 6.0	+ 7 23.1	-0.9652	.5544	.2414	-14	-90
ψ¹ Aquarii	4½	0.79	5.2	9 46.9	14 3.6	- 7 0.1	-1.0155	.5499	.2532	-15	-90
ψ² Aquarii	4½	0.79	5.2	9 52.6	14 59.1	- 6 6.5	-0.6844	.5497	.2542	+ 5	-90
ψ³ Aquarii	5	-0.80	-5.0	-10 18.4	15 27.3	- 5 39.2	-0.1353	.5494	+.2547	+33	-50
B. A. C. 8214	6½	0.87	5.3	8 10.1	22 56.6	+ 1 34.7	-0.3425	.5469	.2614	+24	-63
B. A. C. 8274	6	0.91	5.4	7 5.2	23 4 51.7	+ 7 17.7	+0.1352	.5451	.2658	+49	-36
30 Piscium	5	0.95	5.2	6 43.3	11 0.5	-10 45.8	+1.4132	.5435	.2691	+84	+56
4 Ceti	6	0.99	5.8	3 15.4	13 39.8	- 8 11.9	-1.3406	.5430	.2704	-41	-90
5 Ceti	6	-0.99	-5.8	- 3 9.3	13 52.7	- 7 59.5	-1.3832	.5429	+.2705	-48	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0 Δα	Red'ns from 1873.0 Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 81	6½	−1.04	− 5.5	− 2 55.4	23 21 23.6	− 0 43.7	+0.4264	.5418	+.2729	+68	−21
14 Ceti	6½	1.07	5.5	1 12.3	24 2 29.7	+ 4 12.3	+0.0984	.5410	.2736	+48	−38
15 Ceti	6½	1.08	− 5.4	− 1 12.2	3 40.8	+ 5 21.0	+0.4209	.5410	.2737	+67	−21
B. A. C. 1242	6	1.31	+ 0.9	+19 50.6	27 23 17.3	− 2 9.6	+1.1059	.5598	.1741	+90	+32
A^1 Tauri	4½	1.32	1.3	21 44.0	28 0 47.4	− 0 42.7	−0.5976	.5601	.1706	+10	−64
A^2 Tauri	6	1.32	1.4	21 39.9	1 3.8	− 0 26.9	−0.4802	.5603	.1702	+17	−57
56 Tauri	6	−1.27	+ 1.8	+21 27.9	7 12.9	+ 5 28.9	+0.7325	.5619	+.1568	+90	−10
κ^1 Tauri	4½	1.26	2.1	22 0.1	9 39.8	+ 7 50.5	+0.5507	.5622	.1508	+80	0
κ^2 Tauri	6½	1.26	2.1	21 54.5	9 41.1	+ 7 51.8	+0.6510	.5622	.1508	+90	+ 5
υ^1 Tauri	4½	1.27	2.2	22 31.4	10 3.1	+ 8 13.0	+0.0640	.5625	.1502	+47	−25
υ^2 Tauri	6	1.26	2.3	22 42.5	10 28.5	+ 8 37.5	−0.0655	.5626	.1489	+39	−32
τ Tauri	4½	1.22	2.9	22 42.7	16 51.1	− 9 13.8	+0.8356	.5636	.1340	+90	+18
B. A. C. 1518	6	−1.19	+ 3.6	+24 23.2	22 47.7	− 3 30.1	−0.1700	.5651	+.1198	+33	−35
99 Tauri	6	1.17	3.6	23 44.9	23 25.9	− 2 53.5	+0.5804	.5651	.1180	+84	+ 5
k Tauri	5½	1.19	3.8	24 51.2	23 33.0	− 2 46.6	−0.5671	.5651	.1177	+11	−57
103 Tauri	6	1.14	3.9	24 5.8	29 3 47.0	+ 1 18.1	+0.7071	.5656	.1074	+90	+13
118 Tauri	6	1.06	4.9	25 2.8	12 41.7	+ 9 53.2	+0.5623	.5660	.0846	+83	+ 7
125 Tauri	6	1.01	5.3	25 49.5	17 5.3	− 9 53.0	+0.0841	.5661	.0735	+48	−17
139 Tauri	5½	−0.93	+ 5.9	+25 56.2	30 0 47.7	− 2 27.4	+0.4532	.5656	+.0531	+73	+ 4

MAY.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
39 Geminor.	6½	−0.59	+ 7.2	+26 14.9	1 2 43.2	− 1 28.6	+0.6273	.5594	−.0145	+90	+17
40 Geminor.	6½	0.59	7.2	26 5.2	3 0.3	− 1 12.1	+0.7982	.5594	.0150	+90	+27
47 Geminor.	6	0.52	7.4	27 3.9	8 8.9	+ 3 45.5	−0.3725	.5573	.0278	+22	−38
υ Geminorum	4½	0.37	7.6	27 10.7	18 55.1	− 9 51.1	−0.9425	.5523	.0544	−14	−63
c Geminorum	6	0.32	7.3	26 5.2	22 35.1	− 6 18.8	+0.0305	.5503	.0633	+45	−19
ω^1 Cancri	6	0.21	7.1	25 44.4	2 6 8.7	+ 0 59.3	−0.1355	.5465	.0803	+35	−29
ω^2 Cancri	6½	−0.20	+ 7.0	+25 26.3	6 31.0	+ 1 20.7	+0.1648	.5459	−.0816	+53	−14
ψ^1 Cancri	6½	0.15	7.3	26 13.1	10 21.4	+ 5 3.3	−1.0184	.5444	.0895	−19	−64
ψ^2 Cancri	6	0.15	7.2	25 53 6	10 28.6	+ 5 10.3	−0.6722	.5439	.0904	+ 5	−62
λ Cancri	6	0.08	6.6	24 25.3	15 8.0	+ 9 40.2	+0.4961	.5413	.1000	+76	+ 2
υ^1 Cancri, *mult.*	7	0.05	6.7	24 57.0	18 27.4	−11 5.9	−0.3739	.5395	.1061	+22	−45
υ^2 Cancri	6½	0.04	6.6	24 34.0	18 52.2	−10 43.1	−0.0509	.5391	.1080	+40	−27
υ^3 Cancri	6	−0.02	+ 6.5	+24 30.5	20 13.4	− 9 24.6	−0.1363	.5384	−.1106	+35	−32
32 Cancri	6	−0.01	6.6	24 31.0	20 55.1	− 8 44.3	−0.2224	.5379	.1122	+31	−37
ξ Cancri	5	+0.22	5.3	22 33.5	3 14 16.3	+ 8 3.2	−0.3096	.5275	.1452	+26	−46
79 Cancri	6	0.23	5.3	22 30.7	14 45.2	+ 8 31.2	−0.3276	.5271	.1462	+25	−47
B. A. C. 3138	6	0.25	5.0	21 48.4	16 21.8	+10 4.8	+0.2131	.5259	.1493	+56	−18
B. A. C. 3292	6½	0.39	4.2	20 52.3	4 4 54.0	− 1 46.4	−0.7549	.5189	.1696	+ 1	−67
η Leonis	3½	+0.54	+ 2.1	+17 22.9	19 25.9	−11 40.7	+0.4845	.5111	−.1907	+74	−10
42 Leonis	6	0.62	1.2	15 36.9	5 3 0.6	− 4 19.4	+0.9585	.5077	.2001	+90	+16
B. A. C. 3579	6	0.65	0.8	14 59.5	6 41.3	− 0 45.1	+0.9041	.5059	.2046	+90	+12
i Leonis	6	0.66	0.6	14 47.3	8 28.6	+ 0 59.1	+0.7614	.5052	.2067	+90	+ 3
k Leonis	6	0.73	+ 0.1	14 51.9	16 3.4	+ 8 20.9	−0.9200	.5023	.2147	− 7	−75
ω Virginis	6	+0.94	− 3.5	+ 8 50.1	6 20 24.8	+11 54.7	−0.7107	.4957	−.2384	+ 6	−81
ν Virginis	4½	0.96	4.0	7 14.4	7 0 29.8	− 8 7.0	+0.0680	.4952	.2408	+47	−38
B. A. C. 3996	6	0.96	4.4	5 53.9	2 18.2	− 6 21.6	+1.1071	.4949	2417	+90	+20
b Virginis	6	1.00	5.2	4 21.7	8 17.0	− 0 32.7	+1.3400	.4948	.2447	+90	+42
B. A. C. 4104	6½	1.05	5.5	4 45.6	14 45.7	+ 5 45.4	−0.6929	.4950	.2476	+ 7	−85
c Virginis	5	+1.08	− 5.8	+ 4 1.1	19 34.7	+10 26.4	−1.0762	.4951	−.2492	−16	−86
γ Virg., *mult.*	2½	1.12	7.4	− 0 45.3	8 7 18.9	− 2 8.7	+1.1954	.4968	.2517	+89	+25
B. A. C. 4277	6	1.13	7.4	0 52.8	8 20.9	− 1 8.5	+1.0710	.4972	.2518	+89	+16
k Virginis	6	1.16	8.3	3 7.7	17 5.1	+ 7 21.1	+1.3098	.4993	.2522	+87	+36
46 Virginis	6	+1.17	− 8.1	− 2 41.2	17 35.9	+ 7 51.0	+0.7011	.4996	−.2523	+87	− 7

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
48 Virginis	6	+1.20	- 8.2	- 2 58.9	8 19 23.5	+ 9 35.7	+0.5681	.5001	-.2522	+78	-14
65 Virginis	6	1.25	8.8	4 15.7	9 5 49.1	- 4 16.4	-0.6691	.5038	.2507	+ 8	-88
66 Virginis	6	1.26	8.9	4 30.1	6 27.9	- 3 38.7	-0.5715	.5042	.2506	+13	-79
l^2 Virginis	6	1.28	9.1	5 36.1	10 24.7	+ 0 11.3	-0.3706	.5061	.2494	+23	-64
m Virginis	6	1.30	9.7	8 3.8	15 28.2	+ 5 6.1	+1.0242	.5083	.2476	+82	+13
B. A. C. 4647	6	1.34	9.6	7 26.1	22 26.6	+11 52.3	-1.3674	.5120	.2443	-48	-90
96 Virginis	6½	+1.37	-10.0	- 9 44.1	10 5 36.3	- 5 10.8	-0.6361	.5162	-.2401	+ 8	-85
κ Virginis	4½	1.38	10.0	9 41.1	7 34.6	- 3 16.0	-1.1606	.5175	.2387	-26	-90
2 Libræ	6	1.41	10.1	11 8.1	12 51.3	+ 1 51.1	-0.8586	.5208	.2346	- 6	-90
5 Libræ	6	1.45	10.4	14 55.6	11 23 53.8	-11 27.0	+0.6381	.5287	.2242	+73	- 9
ι Libræ	6	1.46	10.3	13 37.3	1 32.6	- 9 51.3	-1.1130	.5300	.2223	-25	-90
α Libræ	6	1.46	10.4	15 28.3	2 10.5	- 9 14.6	+0.7081	.5303	.2218	+75	- 5
α^2 Libræ	2½	+1.46	-10.4	-15 30.9	2 16.0	- 9 9.3	+0.7348	.5303	-.2217	+74	- 4
ν^1 Libræ	6	1.49	10.4	15 45.9	9 45.9	- 1 53.9	-0.6288	.5362	.2125	+ 4	-86
ν^2 Libræ	5½	1.49	10.4	15 59.6	9 51.2	- 1 48.7	-0.4063	.5363	.2123	+15	-68
28 Libræ	6	1.51	10.3	17 41.9	16 23.4	+ 4 30.7	+0.0337	.5419	.2032	+37	-41
B. A. C. 5109	6	1.53	10.0	19 14.3	21 44.0	+ 9 40.5	+0.5891	.5460	.1951	+66	-11
41 Libræ	6	1.54	9.9	18 53.1	12 0 35.3	-11 34.1	-0.3343	.5484	.1905	+16	-63
κ Libræ	5	+1.54	- 9.9	-19 16.1	1 57.3	-10 14.9	-0.1904	.5494	-.1884	+23	-54
λ Libræ	6	1.55	9.6	19 47.3	7 1.1	- 5 21.6	-0.5757	.5536	.1794	+ 2	-82
B. A. C. 5281	6	1.55	9.5	20 36.8	9 3.4	- 3 23.6	-0.0732	.5553	.1757	+27	-47
ω^1 Scorpii	4	1.55	9.3	20 19.5	12 55.0	+ 0 19.9	-1.0363	.5583	.1682	-27	-90
ω^2 Scorpii	4½	1.56	9.3	20 31.6	13 10.1	+ 0 34.4	-0.8692	.5586	.1678	-16	-90
B. A. C. 5395	6	1.57	9.1	21 4.6	15 52.8	+ 3 11.3	-0.7411	.5609	.1623	- 9	-90
ρ Ophi , *mult.*	5	+1.59	- 8.5	23 9.3	20 55.3	+ 8 2.8	+0.6337	.5649	-.1516	+64	- 8
18 Ophiuchi	6	1.59	7.7	24 25.0	13 7 0.8	- 6 14.0	+0.5282	.5727	.1287	+56	-14
B. A. C. 5641	6½	1.60	7.6	24 36.9	7 40.7	- 5 35.6	+0.6489	.5731	.1268	+63	- 6
22 Ophiuchi	6½	1.58	7.7	23 18.2	9 8.8	- 4 10.8	-0.8947	.5738	.1235	-22	-90
B. A. C. 5709	6	1.59	7.3	24 54.0	11 12.4	- 2 11.9	+0.5120	.5753	.1184	+54	-14
26 Ophiuchi	6	1.59	7.4	24 47.7	11 17.1	- 2 7.4	+0.3936	.5754	.1183	+47	-21
39 Ophi., *mult.*	6	+1.57	- 6.8	-24 8.9	18 33.0	+ 4 51.8	-1.0656	.5804	-.0992	-37	-90
θ Ophiuchi	3½	1.57	6.6	24 52.3	20 8.2	+ 6 23.4	-0.4716	.5812	.0953	- 1	-74
B. A. C. 5909	6½	1.56	6.0	26 10.3	23 59.6	+10 5.7	+0.5234	.5836	.0847	+52	-13
B. A. C. 6024	6½	1.56	5.3	27 1.1	14 7 20.2	- 6 50.9	+0.8488	.5871	.0645	+63	+ 7
B. A. C. 6194	6	1.48	4.1	27 5.2	18 8.5	+ 3 31.4	+0.3944	.5911	.0327	+39	-21
φ Sagittarii	3½	1.41	3.0	27 7.2	15 4 47.9	-10 15.1	+0.2518	.5932	-.0002	+28	-29
σ Sagittarii	2½	+1.38	- 2.7	-26 27.2	8 30.9	- 6 41.2	-0.4105	.5937	+.0114	- 6	-71
τ Sagittarii	3½	1.36	2.0	27 51.2	12 58.7	- 2 24.2	+1.1013	.5936	.0246	+62	+28
B. A. C. 6562	6½	1.32	2.1	26 7.1	15 26.0	- 0 2.9	-0.6008	.5933	.0324	-14	-87
ψ Sagittarii	6	1.30	2.2	25 28.4	16 20.2	+ 0 49.1	-1.2291	.5933	.0344	-57	-90
B. A. C. 6666	6	1.27	1.1	27 14.6	21 49.3	+ 6 4.9	+0.8132	.5925	.0514	+63	+ 5
h^2 Sagittarii	4½	1.22	1.4	25 9.7	16 0 30.3	+ 8 39.3	-1.1604	.5920	.0597	-48	-90
ω Sagittarii	5	+1.15	- 0.2	-26 38.1	7 53.2	- 8 15.7	+0.8582	.5901	+.0810	+64	+ 7
A Sagittarii	5	1.13	- 0.2	26 32.2	9 6.8	- 7 4.9	+0.8606	.5898	.0834	+64	+ 8
B. A. C. 7077	6	0.95	+ 0.6	25 22.2	22 29.1	+ 5 45.4	+1.0563	.5839	.1220	+65	+21
B. A. C. 7197	6	0.85	0.4	23 11.9	17 4 42.9	+11 44.5	-0.3404	.5805	.1379	+ 9	-64
B. A. C. 7237	6	0.83	0.9	24 15.4	6 34.1	-10 28.6	+0.9936	.5794	.1427	+66	+16
χ Capricorni	6	0.73	0.5	21 42.1	12 55.5	- 4 21.8	-0.6414	.5757	.1579	- 4	-90
27 Capricorni	6	+0.72	+ 0.3	-21 3.9	13 20.1	- 3 58.2	-1.2226	.5754	+.1586	-45	-90
φ Capricorni	5½	0.69	0.6	21 10.6	15 49.9	- 1 34.1	-0.7045	.5740	.1647	- 7	-90
33 Capricorni	5½	0.64	0.9	21 23.4	19 20.9	+ 1 49.0	+0.1047	.5720	.1725	+36	-37
35 Capricorni	6	0.62	1.1	21 44.6	20 37.6	+ 3 2.8	+0.6856	.7510	.1755	+69	- 5
37 Capricorni	6	0.58	1.0	20 38.9	23 48.8	+ 6 6.9	+0.1463	.5690	.1822	+39	-36
ε Capricorni	4½	+0.56	+ 0.9	-20 2.0	18 0 45.0	+ 7 1.0	-0.3050	.5685	+.1842	+16	-61

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

Star's—						At Conjunction in R. A.								Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x'	y'	N'n.	S'n.
		s	″	°	′	d	h	m	h	m				°	°
κ Capricorni	5	+0.53	+0.9	-19	26.6	18	3	5.7	+ 9	16.4	-0.4647	.5670	+.1888	+ 8	-72
B. A. C. 7550	6	0.53	1.1	20	12.0		3	19.5	+ 9	29.8	+0.3454	.5669	.1892	+51	-24
29 Aqua., *mult.*	6	0.42	0.8	17	34.5		11	32.5	- 6	35.3	-0.6902	.5613	.2052	- 2	-90
B. A. C. 7818	6	0.28	1.3	17	23.1		22	0.6	+ 3	30.3	+1.3583	.5549	.2224	+73	+53
53 Aqua., *mult.*	6	0.28	1.3	17	23.2		22	0.7	+ 3	30.4	+1.3599	.5549	.2224	+73	+54
56 Aquarii	6	0.24	0.6	15	14.0		23	40.9	+ 5	7.1	-0.4441	.5539	.2251	+14	-70
τ¹ Aqua., *mult.*	6	+0.14	+0.9	-14	43.5	19	7	25.8	-11	24.2	+0.8281	.5494	+.2360	+76	+ 2
τ² Aquarii	4	0.13	0.8	14	15.7		8	16.7	-10	35.1	+0.5598	.5493	.2368	+70	-13
74 Aquarii	6	+0.10	+0.1	12	17.5		10	2.3	- 8	53.1	-1.0141	.5483	.2391	-17	-90
ψ¹ Aquarii	4½	-0.04	-0.2	9	46.8		20	12.7	+ 0	56.5	-1.0637	.5433	.2503	-19	-90
ψ² Aquarii	4½	0.04	0.2	9	52.6		21	9.4	+ 1	51.3	-0.7286	.5428	.2511	+ 2	-90
ψ³ Aquarii	5	-0.05	-0.1	-10	18.3		21	38.3	+ 2	19.2	-0.1740	.5425	+.2517	+31	-53
B. A. C. 8214	6½	0.13	0.3	8	10.0	20	5	18.3	+ 9	43.8	-0.3814	.5394	.2580	+21	-65
B. A. C. 8274	6	0.21	0.5	7	5.2		11	22.4	- 8	24.1	+0.1032	.5373	.2624	+47	-38
30 Piscium	5	0.27	0.3	6	43.2		17	40.8	- 2	18.0	+1.3983	.5357	.2656	+84	+51
4 Ceti	6	0.33	1.3	3	15.3		20	24.4	+ 0	20.2	-1.3868	.5351	.2668	-49	-90
B. A. C. 81	6½	-0.40	-1.0	- 2	55.3	21	4	20.8	+ 8	1.2	+0.4034	.5337	+.2691	+66	-22
14 Ceti	6½	0.46	1.3	+ 1	12.2		9	35.3	-10	54.5	+0.0733	.5330	.2698	+47	-39
15 Ceti	6½	0.47	1.2	1	12.1		10	48.3	- 9	43.9	+0.4002	.5331	.2700	+66	-22
f Piscium	5	0.64	1.2	2	56.7	22	5	42.9	+ 8	34.2	+1.2720	.5332	.2666	+90	+33
B. A. C. 408	6½	0.67	1.3	4	4.4		8	2.8	+10	49.6	+0.7437	.5337	.2657	+90	- 4
96 Piscium	6½	-0.71	-1.8	+ 6	38.2		11	1.9	-10	17.1	-1.0789	.5338	+.2642	-17	-84
μ Piscium	5	0.71	1.4	5	29.2		11	33.5	- 9	46.6	+0.2321	.5341	.2639	+56	-30
B. A. C. 481	6½	0.73	1.6	6	59.7		14	20.6	- 7	4.9	-0.5719	.5346	.2625	+13	-76
ο Piscium	4	0.77	1.6	8	31.0		18	44.4	- 2	49.7	-0.9795	.5354	.2595	-10	-82
ο Arietis	6	0.98	0.8	14	46.3	23	22	11.2	- 0	17.2	-0.6169	.5440	.2318	+10	-72
σ Arietis	6	-0.99	-0.6	+14	33.4	24	1	21.5	+ 2	46.7	+0.3356	.5454	+.2276	+63	-29
139 Tauri	5½	1.00	+5.2	25	56.2	27	9	45.7	+ 8	18.4	+0.4500	.5686	+.0534	+73	+ 4
39 Geminor.	6½	0.78	6.5	26	14.9	28	11	28.4	+ 9	4.6	+0.6201	.5634	-.0148	+90	+17
40 Geminor.	6½	0.78	6.5	26	5.2		11	45.3	+ 9	20.9	+0.7903	.5633	.0153	+90	+26
47 Geminor.	6	0.73	+6.9	27	3.9		16	50.8	- 9	44.7	-0.3777	.5613	-.0284	+21	-38
υ Geminorum	4½	-0.62	+7.4	+27	10.7	29	3	30.4	+ 0	32.0	-0.9480	.5564	-.0552	-14	-63
c Geminorum	6	0.57	7.2	26	5.2		7	8.1	+ 4	2.0	+0.0216	.5540	.0636	+44	-19
ω¹ Cancri	6	0.49	7.2	25	44.4		14	36.9	+11	13.3	-0.1452	.5503	.0814	+35	-30
ω² Cancri	6½	0.48	7.2	25	26.3		14	59.0	+11	36.5	+0.1541	.5502	.0821	+52	-14
ψ¹ Cancri	6½	0.44	7.3	26	13.1		18	47.0	- 8	43.3	-1.0254	.5478	.0907	-29	-64
ψ² Cancri	6	-0.43	+7.2	+25	53.6		18	54.1	- 8	36.4	-0.6809	.5478	-.0909	+ 4	-63
λ Cancri	6	0.37	6.9	24	25.3		23	30.7	- 4	9.2	+0.4825	.5446	.1012	+75	+ 1
ν¹ Cancri	7	0.33	7.0	24	57.0	30	2	18.6	- 1	27.0	-0.3851	.5434	.1065	+21	-59
ν² Cancri	6½	0.32	6.9	24	34.0		3	12.8	- 0	34.6	-0.0633	.5428	.1086	+39	-29
ν³ Cancri	6	0.31	6.9	24	30.6		4	33.2	+ 0	43.1	-0.1488	.5418	.1121	+35	-33
32 Cancri	6	-0.30	+6.8	+24	31.0		5	14.5	+ 1	23.0	-0.2348	.5415	-.1128	+30	-38
ξ Cancri	5	0.10	6.1	22	33.6		22	27.0	- 5	58.3	-0.3255	.5297	.1467	+25	-47
79 Cancri	6	0.10	6.1	22	30.7		22	55.8	- 5	30.3	-0.3437	.5297	.1470	+24	-47
B. A. C. 3138	6	0.08	5.8	21	48.4	31	0	31.6	- 3	57.7	+0.1955	.5286	.1502	+55	-19
B. A. C. 3282	6½	-0.06	+5.3	+20	52.3		12	59.5	+ 8	6.9	-0.7716	.5193	-.1699	0	-69

JUNE.

Name.	Mag.	Δα	Δδ	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x'	y'	N'n.	S'n.
η Leonis	3½	-0.22	+3.7	+17	22.9	1	3	28.3	- 1	50.5	+0.4613	.5118	-.1910	+72	-11
42 Leonis	6	0.28	2.8	15	36.9		11	2.4	+ 5	30.2	+0.9335	.5077	.2062	+90	+14
B. A. C. 3579	6	0.33	2.4	14	59.5		14	43.0	+ 9	4.4	+0.8788	.5054	.2045	+90	+10
i Leonis	6	0.35	2.3	14	47.3		16	30.4	+10	48.6	+0.7355	.5050	.2065	+90	+ 2
k Leonis	6	-0.44	+2.0	+14	51.9	2	0	5.7	- 5	49.1	-0.9495	.5017	-.2145	- 9	-75

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0 Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ω Virginis	6	+0.68	− 1.5	+ 8 50.2	3 4 34.4	− 2 7.9	−0.7425	.4932	−.2372	+ 4	−80
ν Virginis	4½	0.72	2.1	7 14.4	8 41.2	+ 1 52.2	+0.0369	.4926	.2395	+45	−39
B. A. C. 3996	6	0.72	2.7	5 53.9	10 30.2	+ 3 38.2	+1.0782	.4924	.2405	+90	+18
b Virginis	6	0.77	3.4	4 21.7	16 31.8	+ 9 29.9	+1.3107	.4920	.2434	+90	+38
B. A. C. 4104	6½	0.83	3.6	4 45.6	23 3.5	− 8 9.0	−0.7258	.4919	.2460	+ 5	−84
c Virginis	5	0.89	4.0	+ 4 1.1	4 3 55.0	− 3 25.4	−1.1105	.4920	.2476	−19	−86
γ Virg., *mult.*	2½	+0.96	− 6.1	− 0 45.3	15 45.3	+ 8 5.5	+1.1668	.4936	−.2501	+89	+23
B. A. C. 4277	6	0.97	6.1	0 52.8	16 47.9	+ 9 6.3	+1.0418	.4938	.2502	+89	+14
k Virginis	6	1.05	7.2	3 7.7	5 1 36.6	− 6 19.5	+1.2820	.4959	.2506	+87	+34
46 Virginis	6	1.06	7.0	2 41.2	2 7.7	− 5 49.3	+0.6722	.4962	.2506	+86	− 8
48 Virginis	6	1.08	7.2	2 58.9	3 56.1	− 4 3.9	+0.5391	.4968	.2506	+75	−15
65 Virginis	6	1.16	7.8	4 15.7	14 26.8	+ 6 9.2	−0.6988	.5007	.2490	+ 6	−90
66 Virginis	6	+1.17	− 7.9	− 4 30.1	15 5.9	+ 6 47.1	−0.6008	.5011	−.2489	+11	−81
l³ Virginis	5	1.21	8.3	5 36.1	19 4.4	+10 39.0	−0.3986	.5027	.2478	+21	−66
m Virginis	6	1.24	9.1	8 3.8	6 0 10.0	− 8 24.3	+0.9988	.5054	.2461	+82	+12
B. A. C. 4591	6	1.27	9.4	9 4.5	3 5.9	− 5 33.4	+1.3652	.5071	.2449	+81	+46
96 Virginis	6½	1.37	9.6	9 44.1	14 22.5	+ 5 23.4	−0.6586	.5141	.2388	+ 6	−87
κ Virginis	4½	1.39	9.7	9 41.1	16 21.3	+ 7 18.5	−1.1822	.5155	.2375	−28	−90
2 Libræ	6	+1.43	− 9.9	−11 8.1	21 39.0	−11 33.4	−0.8788	.5192	−.2336	− 7	−90
5 Libræ	6	1.53	10.5	14 55.5	7 8 42.3	− 0 50.6	+0.6210	.5279	.2234	+72	−10
μ Libræ	6	1.54	10.2	13 37.3	10 21.1	+ 0 45.1	−1.1269	.5292	.2217	+26	−90
α¹ Libræ	6	1.55	10.7	15 28.3	10 59.0	+ 1 21.7	+0.6915	.5298	.2210	+74	− 6
α² Libræ	2½	1.55	10.7	15 30.9	11 4.5	+ 1 27.1	+0.7094	.5298	.2209	+74	− 5
ν¹ Libræ	6	1.62	10.5	15 46.0	18 33.7	+ 8 41.8	−0.6396	.5363	.2121	+ 3	−87
ν² Libræ	6	+1.62	−10.5	−15 59.6	18 38.9	+ 8 46.9	−0.4175	.5364	−.2120	+15	−68
28 Libræ	6	1.69	10.6	17 41.9	8 1 9.7	− 8 55.2	+0.0245	.5422	.2031	+36	−41
B. A. C. 5109	6	1.74	10.6	19 14.4	6 28.7	− 3 47.0	+0.5798	.5471	.1951	+66	−12
41 Libræ	6	1.76	10.4	18 53.1	9 18.8	− 1 2.7	−0.3383	.5497	.1905	+16	−63
κ Libræ	5	1.77	10.4	19 16.1	10 40.3	+ 0 15.9	−0.1943	.5510	.1883	+23	−54
λ Libræ	6	1.82	10.2	19 47.3	15 41.7	+ 5 6.9	−0.5750	.5558	.1795	+ 2	−82
B. A. C. 5281	6	+1.84	−10.1	−20 36.8	17 42.9	+ 7 3.8	−0.0740	.5577	−.1758	+27	−47
ω¹ Scorpii	4	1.87	9.9	20 19.5	21 32.2	+10 44.9	−1.0306	.5613	.1684	−27	−90
ω² Scorpii	4½	1.87	9.9	20 31.6	21 47.2	+10 59.4	−0.8636	.5615	.1680	−16	−90
B. A. C. 5395	6	1.89	9.8	21 4.6	9 0 28.1	−10 25.5	−0.7347	.5640	.1626	− 9	−90
ρ Ophi., *mult.*	5	1.95	9.5	23 9.3	5 27.1	− 5 37.5	+0.6346	.5687	.1520	+64	− 8
18 Ophiuchi	6	2.02	8.8	24 25.0	15 24.2	+ 3 57.2	+0.5345	.5773	.1290	+56	−13
B. A. C. 5641	6½	+2.03	− 8.7	−24 36.9	16 3.4	+ 4 34.9	+0.6546	.5779	−.1274	+63	− 6
22 Ophiuchi	6½	2.02	8.5	23 18.2	17 30.1	+ 5 58.3	−0.8770	.5790	.1238	−22	−90
B. A. C. 5709	6	2.05	8.3	24 54.0	19 31.7	+ 7 55.2	+0.5208	.5806	.1188	+54	−14
26 Ophiuchi	6	2.05	8.3	24 47.7	19 36.3	+ 7 59.7	+0.4031	.5807	.1186	+47	−20
39 Oph., *mult.*	6	2.06	7.5	24 8.9	10 2 44.8	− 9 8.6	−1.0399	.5862	.0998	−34	−90
B. A. C. 5831	6	2.06	7.5	23 56.0	2 47.0	− 9 6.4	−1.2642	.5862	.0996	−57	−90
θ Ophiuchi	3½	+2.08	− 7.3	−24 52.3	4 18.2	− 7 38.9	−0.4497	.5872	−.0955	− 1	−72
B. A. C. 5909	6½	2.11	6.9	26 10.3	8 5.2	− 4 0.9	+0.5387	.5897	.0850	+52	−13
B. A. C. 6024	6½	2.15	6.0	27 1.2	15 16.9	+ 2 53.4	+0.8648	.5940	.0641	+63	+ 8
B. A. C. 6194	6	2.15	4.4	27 5.3	11 1 51.1	−10 58.3	+0.4212	.5987	−.0321	+41	−19
φ Sagittarii	3½	2.12	2.9	27 7.2	12 15.7	− 0 59.6	+0.2859	.6012	+.0002	+30	−27
σ Sagittarii	2½	2.10	2.4	26 27.1	15 53.4	+ 2 29.0	−0.3667	.6017	.0118	− 4	−66
τ Sagittarii	3½	+2.11	− 1.5	−27 51.2	20 14.7	+ 6 39.4	+1.1306	.6019	+.0255	+62	+31
B. A. C. 6562	6½	2.07	1.4	26 7.1	22 38.4	+ 8 57.1	−0.5509	.6020	.0330	−12	−82
ψ Sagittarii	6	2.05	1.3	25 28.4	23 31.2	+ 9 47.7	−1.1719	.6020	.0358	−52	−90
B. A. C. 6666	6	2.05	0.2	27 14.6	12 4 52.2	− 9 4.6	+0.8515	.6011	.0527	+63	+ 7
h² Sagittarii	4½	2.01	− 0.2	25 9.7	7 29.3	− 6 34.1	−1.0988	.6007	.0608	−43	−90
ω Sagittarii	5	+1.98	+ 1.2	−26 38.0	14 41.4	+ 0 20.1	+0.9020	.5983	+.0828	+63	+10

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
A Sagittarii	5	+1.97	+1.3	−26 32.2	12 15 53.2	+ 1 29.0	+0.9053	.5979	+.0864	+63	+11
B. A. C. 7077	6	1.82	3.1	25 22.2	13 4 56.6	− 9 59.6	+1.1069	.5917	.1238	+65	+26
B. A. C. 7197	6	1.74	3.3	23 11.8	11 2.1	− 4 8.8	−0.2718	.5880	.1402	+13	−59
B. A. C. 7237	6	1.73	3.8	24 15.4	12 50.9	− 2 24.3	+1.0498	.5868	.1448	+66	+21
χ Capricorni	6	1.62	4.0	21 42.1	19 4.3	+ 3 34.4	−0.5656	.5825	.1604	0	−81
27 Capricorni	6	1.61	3.9	21 3.8	19 28.4	+ 3 57.6	−1.1416	.5822	.1614	−37	−90
φ Capricorni	5½	+1.58	+4.2	−21 10.6	21 55.2	+ 6 18.7	−0.6267	.5804	+.1671	− 3	−88
33 Capricorni	5½	1.55	4.8	21 23.3	14 1 22.2	+ 9 37.7	+0.1766	.5778	.1750	+40	−33
35 Capricorni	6	1.54	4.9	21 44.6	2 37.5	+10 50.1	+0.7534	.5769	.1779	+66	− 1
37 Capricorni	6	1.49	5.0	20 38.9	5 45.1	−10 9.4	+0.2205	.5746	.1846	+43	−31
ε Capricorni	4½	1.47	4.9	20 1.9	6 40.4	− 9 16.2	−0.2267	.5739	.1865	+20	−56
κ Capricorni	5	1.44	5.0	19 26.6	8 58.6	− 7 3.3	−0.3843	.5722	.1912	+13	−66
B. A. C. 7550	6	+1.44	+5.2	−20 12.0	9 12.2	− 6 50.2	+0.4195	.5721	+.1917	+55	−29
29 Aqua., *mult.*	6	1.34	5.3	17 34.4	17 17.5	+ 0 57.1	−0.6049	.5660	.2071	+ 3	−84
56 Aquarii	6	1.15	5.6	15 13.9	15 5 16.8	−11 29.7	−0.3563	.5573	.2266	+18	−64
τ^1 Aqua., *mult.*	6	1.05	6.0	14 43.4	12 57.4	− 4 5.3	+0.9128	.5521	.2370	+75	+ 7
τ^2 Aquarii	4	1.03	5.9	14 15.6	13 47.9	− 3 16.5	+0.6457	.5515	.2381	+74	− 9
74 Aquarii	6	0.99	5.4	12 17.4	15 32.7	− 1 35.4	−0.9215	.5503	.2402	−11	−90
ψ^1 Aquarii	4½	+0.84	+5.3	− 9 46.7	16 1 39.9	+ 8 11.0	−0.9703	.5441	+.2509	−13	−90
ψ^2 Aquarii	4½	0.84	5.4	9 52.5	2 36.4	+ 9 5.7	−0.6357	.5435	.2517	+ 7	−85
ψ^3 Aquarii	5	0.83	5.6	10 18.2	3 5.2	+ 9 33.5	−0.0826	.5433	.2521	+36	−47
B. A. C. 8214	6½	0.73	5.3	8 9.9	10 44.6	− 7 2.5	−0.2887	.5392	.2582	+26	−59
B. A. C. 8274	6	0.65	5.4	7 5.1	16 49.0	− 1 10.1	+0.1959	.5365	.2619	+52	−33
4 Ceti	6	0.52	4 5	3 15.2	17 1 53.0	+ 7 36.1	−1.2969	.5332	.2657	−36	−90
5 Ceti	6	+0.52	+4.5	− 3 9.2	2 6.2	+ 7 49.0	−1.3400	.5331	+.2658	−41	−90
B. A. C. 81	6½	0.43	4.9	2 55.2	9 52.5	− 8 39.8	+0.4958	.5309	.2675	+72	−17
14 Ceti	6½	0.37	4.6	1 12.2	15 9.7	− 3 32.7	+0.1641	.5298	.2677	+52	−34
15 Ceti	6½	0.35	4.7	− 1 12.1	16 23.5	− 2 21.4	+0.4921	.5298	.2677	+72	−18
f Piscium	5½	0.14	4.1	+ 2 56.8	18 11 32.1	− 7 49.3	+1.3640	.5285	.2638	+90	+45
B. A. C. 408	6½	0.10	3.8	4 4.5	13 54.0	− 5 31.8	+0.8312	.5287	.2627	+90	+ 2
96 Piscium	6½	+0.05	+3.0	+ 6 38.3	16 55.9	− 2 35.7	−1.0051	.5290	+.2612	−12	−83
μ Piscium	5	0.06	3.5	5 29.3	17 28.0	− 2 4.6	+0.3150	.5290	.2609	+61	−26
B. A. C. 481	6½	+0.03	3.1	6 59.8	20 17.9	+ 0 39.8	+0.4960	.5294	.2593	+17	−71
υ Piscium	4	−0.04	2.8	8 31.1	19 0 46.1	+ 4 59.5	−0.9093	.5300	.2563	− 6	−81
ο Arietis	6	0.30	2.4	14 46.4	20 4 43.7	+ 8 2.8	−0.5639	.5381	.2283	+13	−70
σ Arietis	6	0.33	2.6	14 33.5	7 57.6	+11 10.4	+0.3907	.5393	.2240	+66	−17
53 Arietis	6	−0.41	+2.3	+17 23.3	15 16.5	− 5 45.3	−0.9550	.5424	+.2135	−10	−73
13 Tauri	5½	0.52	2.6	19 17.6	21 7 4.3	+ 9 30.3	+0.2227	.5492	.1869	+56	−21
B. A. C 1143	6	0.54	2.4	20 31.5	8 0.5	+10 24.6	−0.8937	.5496	.1852	− 7	−69
B A. C. 1242	6	0.57	2.9	19 50.6	15 26.1	− 6 25.2	+1.1437	.5529	.1709	+90	+35
A^1 Tauri	4½	0.59	2.6	21 44.0	16 58.4	− 4 56.1	−0.5820	.5535	.1678	+11	−63
A^2 Tauri	6	0.59	2.6	21 39.9	17 15.2	− 4 40.0	−0.4625	.5536	.1672	+18	−56
56 Tauri	6	−0.62	+3.1	+21 28.0	23 32.5	+ 1 24.2	+0.7571	.5562	+.1541	+90	+11
κ^1 Tauri	4½	0.63	3.2	22 0.1	22 2 2.4	+ 3 48.7	+0.5714	.5575	.1486	+83	+ 1
κ^2 Tauri	6½	0.63	3.2	21 54.5	2 3.8	+ 3 50.0	+0.6730	.5575	.1485	+90	+ 7
υ^1 Tauri	4½	0.64	3.1	22 31.4	2 26.2	+ 4 11.7	+0.0788	.5576	.1477	+47	−24
υ^2 Tauri	6	0.64	3.1	22 42.5	2 52.1	+ 4 36.6	−0.0523	.5577	.1468	+40	−31
τ Tauri	4½	0.66	3.5	22 42.7	9 21.4	+10 52.1	+0.8513	.5601	.1322	+90	+19
B. A. C. 1518	6	−0.69	+3.6	+24 23.2	15 21.3	− 7 20.9	−0.1699	.5622	+.1182	+33	−34
90 Tauri	6½	0.68	3.8	23 45.0	16 2.1	− 6 41.6	+0.5857	.5624	.1166	+94	+ 5
k Tauri	5½	0.71	3.6	24 51.2	16 9.2	− 6 34.7	−0.5711	.5624	+.1163	+40	−58
ω^1 Cancri	6	0.48	6.6	25 44.4	25 22 34.5	− 2 59.4	−0.2274	.5520	−.0825	+36	−34
ω^2 Cancri	6½	0.48	6.6	25 26.3	22 56.5	− 2 38.1	+0.0717	.5518	.0833	+47	−18
ψ^1 Cancri	6½	−0.45	+6.7	+26 13.1	26 2 44.2	+ 1 1.7	−1.1133	.5495	−.0920	−28	−64

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ψ² Cancri	6	−0.45	+ 6.7	+25 53.5	26 2 51.3	+ 1 8.4	−0.7683	.5495	−.0922	− 1	−64
λ Cancri	6	0.42	6.6	24 25.3	7 17.4	+ 5 25.2	+0.3929	.5469	.1020	+68	− 4
υ¹ Cancri, *mult.*	7	0.39	6.7	24 57.0	10 23.2	+ 8 25.0	−0.4953	.5456	.1087	+15	−52
υ² Cancri	6½	0.39	6.6	24 34.0	11 9.0	+ 9 9.3	−0.1591	.5445	.1103	+34	−33
υ³ Cancri	6	0.38	6.6	24 30.5	12 29.2	+10 26.8	−0.2459	.5437	.1131	+29	−38
32 Cancri	6	0.37	4.6	24 31.0	13 10.4	+11 6.7	−0.3328	.5432	.1145	+24	−43
ξ Cancri	5	−0.23	− 6.1	+22 33.6	27 6 20.2	+ 3 42.7	−0.4415	.5319	−.1477	+18	−53
79 Cancri	6	0.23	6.1	22 30.7	6 48.9	+ 4 10.5	−0.4693	.5316	.1485	+18	−54
B. A. C. 3138	6	0.22	5.9	21 48.4	8 24.5	+ 5 43.0	+0.0775	.5306	.1513	+47	−25
B. A. C. 3292	6½	−0.11	5.5	20 52.3	20 50.4	− 6 14.6	−0.9042	.5222	.1718	− 9	−69
η Leonis	3½	+0.01	4.3	17 22.9	28 11 17.7	+ 7 46.6	+0.3181	.5131	.1922	+62	−18
42 Leonis	6	0.07	3.6	15 36.9	18 51.6	− 8 52.9	+0.7843	.5087	.2014	+90	+ 5
B. A. C. 3579	6	+0.11	+ 3.3	+14 59.5	22 32.2	− 5 18.7	+0.7268	.5067	−.2057	+90	+ 1
i Leonis	6	0.13	3.2	14 47.3	29 0 19.6	− 3 34.4	+0.5824	.5063	.2077	+81	− 7
k Leonis	6	0.20	3.0	14 51.9	7 55.4	+ 3 48.4	−1.1087	.5019	.2153	−21	−75
ω Virginis	6	0.42	+ 0.1	8 50.2	30 12 31.0	+ 7 36.4	−0.9204	.4918	.2368	− 7	−81
ν Virginis	4½	0.45	− 0.6	7 14.4	16 39.4	+11 38.2	−0.1395	.4910	.2390	+36	−49
B. A. C. 3996	6	+0.47	− 1.1	+ 5 54.0	18 29.3	−10 34.9	+0.9044	.4907	−.2399	+90	+ 7

JULY.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
b Virginis	6	+0.52	− 1.9	+ 4 21.7	1 0 33.8	− 4 40.3	+1.1374	.4898	−.2426	+90	+22
B. A. C. 4104	6½	0.58	1.9	4 45.6	7 9.2	+ 1 44.4	−0.9093	.4893	.2449	− 6	−85
c Virginis	5	0.61	2.4	+ 4 1.1	12 3.8	+ 6 31.1	−1.2963	.4892	.2462	−35	−86
γ Virg., *mult.*	2½	0.72	4.4	− 0 45.2	2 0 2.2	− 5 49.8	+0.9936	.4903	.2482	+89	+11
B. A. C. 4277	6	0.74	4.6	0 52.7	1 5.5	− 4 48.2	+0.8684	.4904	.2483	+89	+ 3
k Virginis	6	+0.81	− 5.6	− 3 7.7	10 1.2	+ 3 53.0	+1.1125	.4922	−.2484	+87	+19
46 Virginis	6	0.82	5.5	2 41.2	10 32.7	+ 4 23.5	+0.4991	.4923	.2484	+73	−17
48 Virginis	6	0.84	5.6	2 58.8	12 22.6	+ 6 10.5	+0.3657	.4928	.2483	+64	−24
65 Virginis	6	0.95	6.3	4 15.7	23 2.4	− 7 27.4	−0.8748	.4965	.2466	− 4	−90
66 Virginis	6	0.96	6.3	4 30.1	23 42.0	− 6 48.8	−0.7758	.4967	.2464	+ 2	−90
*l*² Virginis	5	+1.00	− 6.9	− 5 36.1	3 3 44.1	− 2 53.5	−0.5703	.4986	−.2452	+12	−79
m Virginis	6	1.05	7.9	8 3.8	8 54.3	+ 2 8.0	+0.8391	.5009	.2433	+82	+ 2
B. A. C. 4591	6	1.08	8.3	9 4.5	11 52.9	+ 5 1.5	+1.2100	.5024	.2420	+81	+27
96 Virginis	6½	1.20	8.7	9 44.0	23 19.9	− 7 51.4	−0.8175	.5092	.2360	− 3	−90
κ Virginis	4½	1.23	8.6	9 41.1	4 1 20.4	− 5 54.4	−1.3428	.5105	.2347	−45	−90
λ Virginis	4½	+1.26	− 9.6	−12 47.3	4 29.4	− 2 51.0	−1.2563	.5127	−.2324	+78	+33
2 Libræ	6	1.29	9.1	11 8.1	6 42.9	− 0 41.5	−1.0318	.5143	.2307	−17	−90
5 Libræ	6	1.42	10.1	14 55.5	17 55.8	+10 10.8	+0.4876	.5230	.2207	+65	−17
μ Libræ	6	1.43	9.8	13 37.3	19 35.8	+11 47.8	−1.2671	.5244	.2190	−40	−90
α¹ Libræ	6	1.45	10.4	15 28.3	20 14.2	−11 35.0	+0.5614	.5249	.2182	+69	−13
α² Libræ	2½	+1.45	−10.4	−15 30.9	20 19.9	−11 29.6	+0.5884	.5250	−.2181	+70	−12
ν¹ Libræ	6	1.54	10.3	15 45.9	5 3 54.8	− 4 9.0	−0.7670	.5317	.2094	− 4	−90
ν² Libræ	5½	1.54	10.3	15 59.6	4 0.1	− 4 3.9	−0.5439	.5317	.2093	+ 8	−78
28 Libræ	6	1.63	10.7	17 41.9	10 35.6	+ 2 18.6	−0.0917	.5378	.2006	+30	−48
B. A. C. 5109	6	1.70	10.8	19 14.4	15 57.9	+ 7 30.2	+0.4732	.5431	.1926	+59	−17
41 Libræ	6	−1.74	−10.6	+18 53.1	18 49.8	+10 16.3	−0.4444	.5458	−.1881	+10	−70
κ Libræ	5	1.76	10.6	19 16.1	20 12.0	+11 35.7	−0.2982	.5472	.1858	+17	−61
λ Libræ	6	1.83	10.3	19 47.3	6 1 16.0	− 7 30.8	−0.6727	.5523	.1772	− 3	−90
B. A. C. 5281	6	1.86	10.5	20 36.8	3 18.1	− 5 32.9	−0.1674	.5543	.1735	+22	−52
ω¹ Scorpii	4	+1.89	−10.1	−20 19.6	7 9.0	− 1 50.2	−1.1194	.5582	−.1662	−34	−90
ω² Scorpii	4½	1.90	10.2	20 31.6	7 24.1	− 1 35.7	−0.9524	.5584	.1658	−21	−90
B. A. C. 5395	6	1.93	10.1	21 4.6	10 6.0	+ 1 0.4	−0.8191	.5611	.1695	−14	−90
ρ Ophi., *mult.*	5	+2.02	−10.2	−23 9.3	15 6.4	+ 5 49.9	+0.5594	.5662	−.1500	+59	−12

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—						At Conjunction in R. A.								Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Red'ns from 1873.0. Δδ	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x′	y′	N'n.	S'n.
		s	″	°	′	d	h	m	h	m				°	°
18 Ophiuchi	6	+2.14	− 9.5	−24	25.0	7	1	5.1	− 8	33.8	+0.4740	.5760	−.1274	+52	−16
B. A. C. 5641	6½	2.15	9.4	24	36.9		1	44.4	− 7	56.1	+0.5952	.5766	.1258	+59	−10
22 Ophiuchi	6½	2.16	9.0	23	18.2		3	11.2	− 6	32.6	−0.9326	.5779	.1222	−25	−90
B. A. C. 5709	6	2.21	9.1	24	54.1		5	12.8	− 4	35.6	+0.4661	.5798	.1171	+50	−17
26 Ophiuchi	6	2.20	9.1	24	47.7		5	17.5	− 4	31.1	+0.3491	.5799	.1169	+44	−23
39 Oph., *mult.*	6	2.28	8.0	24	8.9		12	25.3	+ 2	20.0	−1.0799	.5861	.0983	−38	−90
θ Ophiuchi	3½	+2.29	− 8.0	−24	52.3		13	58.5	+ 3	49.4	−0.4885	.5877	−.0939	− 3	−76
B. A. C. 5909	6½	2.35	7.7	26	10.3		17	44.6	+ 7	26.5	+0.5031	.5905	.0835	+51	−14
B. A. C. 6024	6½	2.42	6.7	27	1.2	8	0	53.9	− 9	41.5	+0.8389	.5956	.0628	+63	+ 6
B. A. C. 6194	6	2.51	5.1	27	5.3		11	22.6	+ 0	21.2	+0.4137	.6017	−.0586	+40	−19
φ Sagittarii	3½	2.57	3.3	27	7.2		21	39.6	+10	12.3	+0.2963	.6054	+.0021	+31	−26
σ Sagittarii	2½	2.56	2.7	26	27.1	9	1	14.1	−10	22.3	−0.3455	.6062	.0137	− 3	−65
τ Sagittarii	3½	+2.60	− 1.9	−27	51.2		5	31.2	− 6	16.1	+1.1468	.6068	+.0275	+62	+33
B. A. C. 6562	6½	2.57	1.4	26	7.1		7	52.5	− 4	0.8	−0.5165	.6070	.0352	−10	−78
ψ Sagittarii	6	2.56	1.2	25	28.4		8	44.4	− 3	11.1	−1.1306	.6070	.0379	−48	−90
B. A. C. 6666	6	2.59	− 0.3	27	14.6		13	59.6	+ 1	50.6	+0.8835	.6070	.0550	+64	+ 9
h^1 Sagittarii	6	2.55	+ 0.2	24	59.7		16	19.0	+ 4	4.1	−1.2246	.7067	.0624	−55	−90
h^2 Sagittarii	4½	2.55	0.2	25	9.7		16	33.6	+ 4	18.1	−1.0430	.6067	.0632	−39	−90
ω Sagittarii	5	+2.58	+ 1.8	−26	38.0		23	36.8	+11	3.4	+0.9488	.6054	+.0854	+64	+14
A Sagittarii	5	2.58	2.0	26	32.2	10	0	47.0	−11	49.3	+0.9541	.6050	.0891	+64	+14
B. A. C. 7077	6	2.52	4.2	25	22.2		13	32.0	+ 0	23.7	+1.1741	.5995	.1301	+65	+33
B. A. C. 7197	6	2.44	5.2	23	11.8		19	28.2	+ 6	5.2	−0.1776	.5961	.1437	+18	−53
B. A. C. 7237	6	2.46	5.7	24	15.3		21	14.2	+ 7	46.9	+1.1303	.5950	.1486	+66	+28
χ Capricorni	6	2.36	6.3	21	42.1	11	3	17.7	−10	24.4	−0.4538	.5908	.1643	+ 6	−72
27 Capricorni	6	+2.35	+ 6.2	−21	3.8		3	41.1	−10	1.9	−1.0216	.5906	+.1653	−28	−90
φ Capricorni	5½	2.34	6.7	21	10.5		6	4.0	− 7	44.8	−0.5095	.5890	.1712	+ 3	−76
33 Capricorni	5½	2.32	7.3	21	23.3		9	25.2	− 4	31.5	+0.2886	.5866	.1792	+46	−27
35 Capricorni	6	2.32	7.6	21	44.5		10	38.4	− 3	21.3	+0.8594	.5856	.1820	+68	+ 6
37 Capricorni	6	2.28	7.9	20	38.8		13	40.8	− 0	26.0	+0.3388	.5832	.1890	+50	−24
ε Capricorni	4½	2.26	7.8	20	1.9		14	34.6	+ 0	25.6	−0.1008	.5826	.1910	+27	−48
κ Capricorni	5	+2.22	+ 8.2	−19	26.5		16	48.9	+ 2	34.8	−0.2524	.5809	+.1957	+19	−57
B. A. C. 7550	6	2.24	8.3	20	11.9		17	2.1	+ 2	47.4	+0.5405	.5808	.1962	+62	−14
29 Aqua., *mult.*	6	2.12	8.7	17	34.4	12	0	53.6	+10	20.9	−0.4572	.5748	.2118	+11	−71
56 Aquarii	6	1.97	9.7	15	13.9		12	32.7	− 2	26.2	−0.1949	.5650	.2314	+26	−54
τ^1 Aqua., *mult.*	6	1.90	10.3	14	43.3		20	0.6	+ 4	45.5	+1.0673	.5602	.2418	+75	+17
τ^2 Aquarii	4	1.88	10.3	14	15.5		20	49.7	+ 5	32.8	+0.8050	.5596	.2428	+76	0
74 Aquarii	6	+1.83	+10.0	−12	17.3		22	31.6	+ 7	11.1	−0.7394	.5584	+.2449	0	−90
ψ^1 Aquarii	4½	1.71	10.2	9	46.6	13	8	22.9	− 7	18.4	−0.7762	.5515	.2552	− 1	−90
ψ^2 Aquarii	4½	1.70	10.4	9	52.4		9	18.0	− 6	25.2	−0.4453	.5509	.2560	−17	−69
ψ^3 Aquarii	5	1.69	10.5	10	18.1		9	46.1	− 5	58.1	+0.1019	.5505	.2565	+46	−37
B. A. C. 8214	6½	1.59	10.6	8	9.9		17	14.2	+ 1	14.6	−0.0946	.5469	.2621	+36	−48
B. A. C. 8274	6	1.51	10.6	7	5.0		23	10.2	+ 6	58.6	+0.3895	.5428	.2657	+64	−23
27 Piscium	5½	+1.44	+10.0	− 4	15.5	14	3	50.9	+11	29.9	−1.1948	.5405	+.2678	−26	−90
29 Piscium	5½	1.42	10.0	3	43.9		5	18.0	−11	6.0	−1.3351	.5398	.2682	−41	−90
4 Ceti	6	1.39	10.1	3	15.1		8	2.6	− 8	26.8	−1.0809	.5387	.2691	−17	−90
5 Ceti	6	1.39	10.1	3	9.1		8	15.6	− 8	14.2	−1.1238	.5386	.2691	−20	−90
B. A. C. 5	6	1.38	10.0	2	55.6		8	30.1	− 8	0.2	−1.2856	.5385	.2691	−34	−90
B. A. C. 81	6½	1.29	10.4	2	55.1		15	53.0	− 0	51.9	+0.6985	.5357	.2704	+87	− 6
10 Ceti	6	+1.27	+ 9.8	− 0	45.0		16	52.6	+ 0	5.7	−1.2196	.5354	+.2704	−28	−90
14 Ceti	6½	1.23	10.1	1	12.1		21	4.8	+ 4	9.8	+0.3717	.5341	.2705	+64	−24
15 Ceti	6½	1.21	10.1	− 1	12.0		22	17.4	+ 5	20.0	+0.6972	.5338	.2704	+89	− 7
17 Pisc., *mult.*	6	1.05	9.0	+ 4	14.0	15	11	27.0	− 5	55.9	−1.2685	.5313	.2675	−32	−86
B. A. C. 408	6½	0.97	9.3	4	4.6		19	31.7	+ 1	53.2	+1.0368	.5307	.2644	+90	+15
96 Piscium	6½	+0.93	+ 8.5	+ 6	38.4		22	32.1	+ 4	47.8	−0.7877	.5306	+.2620	+ 1	−74

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. $\Delta\alpha$	Red'ns from 1873.0. $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
μ Piscium	5	+0.92	+9.0	+ 5 29.4	15 23 3.9	+ 5 18.6	+0.5232	.5306	+.2617	+75	−15
B. A. C. 481	6½	0.90	8.5	6 59.8	16 1 52.5	+ 8 1.8	−0.2852	.5306	.2599	+28	−57
o Piscium	4	0.85	8.1	8 31.2	6 19.0	−11 40.2	−0.6990	.5309	.2564	+ 6	−82
29 Arietis	6½	0.60	6.6	14 28.3	17 4 46.9	+10 4.1	−1.3186	.5347	.2337	−42	−76
o Arietis	6	0.55	6.6	14 46.5	10 14.5	− 8 39.0	−0.3769	.5361	.2270	+23	−58
σ Arietis	6	+0.52	+6.7	+14 33.5	13 29.0	− 5 30.9	+0.5748	.5374	+.2222	+80	− 8
53 Arietis	6	0.44	6.0	17 23.4	20 49.9	+ 1 35.4	−0.7805	.5396	.2114	0	−64
13 Tauri	5½	0.29	5.7	19 17.6	18 12 44.5	− 7 2.1	+0.3799	.5456	.1846	+66	−13
B. A. C. 1143	6	0.28	5.3	20 31.5	13 41.2	− 6 7.3	−0.7415	.5459	.1828	+ 2	−69
B. A. C. 1242	6	0.21	5.6	19 50.7	21 11.0	+ 1 7.1	+1.2927	.5489	.1684	+90	+52
A^1 Tauri	4½	+0.20	+5.2	+21 44.0	22 44.2	+ 2 37.1	−0.4419	.5495	+.1653	+19	−55
A^2 Tauri	6	0.20	5.2	21 39.9	23 1.2	+ 2 53.4	−0.3232	.5496	.1647	+25	−48
56 Tauri	6	0.14	5.3	21 28.0	19 5 22.6	+ 9 1.6	+0.8933	.5521	.1517	+90	+19
κ^1 Tauri	4½	0.12	5.3	22 0.1	7 54.1	+11 27.8	+0.7028	.5531	.1462	+90	+ 8
κ^2 Tauri	6½	0.12	5.3	21 54.6	7 55.5	+11 29.2	+0.8047	.5531	.1462	+90	+14
υ^1 Tauri	4½	+0.12	+5.1	+22 31.5	8 18.2	+11 51.1	+0.2074	.5532	+.1453	+55	−17
υ^2 Tauri	6	0.11	5.1	22 42.6	8 44.4	−11 43.6	+0.0749	.5533	.1444	+47	−24
τ Tauri	4½	0.06	5.2	22 42.7	15 18.3	− 5 23.6	+0.9705	.5559	.1296	+90	+26
B. A. C. 1518	6	0.02	4.9	24 23.2	21 22.5	+ 0 27.7	−0.0632	.5578	.1159	+40	−28
99 Tauri	6	0.02	5.0	23 45.0	22 3.8	+ 1 7.5	+0.6953	.5580	.1141	+90	+12
k Tauri	5½	+0.02	+4.8	+24 51.2	22 11.0	+ 1 14.5	−0.4679	.5581	+.1138	+17	−51
103 Tauri	6	−0.01	5.0	24 5.8	20 2 31.2	+ 5 25.4	+0.8116	.5593	.1033	+90	+19
118 Tauri	6	0.07	5.0	25 2.8	11 37.4	− 9 48.0	+0.6390	.5613	.0813	+90	+12
125 Tauri	6	0.10	4.9	25 49.5	16 5.8	− 5 29.2	+0.1427	.5619	.0700	+51	−13
139 Tauri	5½	0.13	5.1	25 56.2	23 55.3	+ 2 3.3	+0.4926	.5628	+.0502	+76	+ 7
39 Geminor.	6½	−0.21	+5.5	+26 14.8	22 2 3.1	+ 3 14.6	+0.5875	.5605	−.0176	+86	+15
40 Geminor.	6½	0.22	5.6	26 5.1	2 20.3	+ 3 31.1	+0.7582	.5604	.0184	+90	+24
B. A. C. 3292	6½	0.08	5.0	20 52.3	25 3 53.0	+ 2 35.7	−1.0332	.5226	.1737	−17	−69
η Leonis	3½	−0.03	4.4	17 22.9	18 21.7	− 7 21.8	+0.1633	.5138	.1942	+52	−26
42 Leonis	6	0.00	3.8	15 36.9	26 1 56.1	− 0 0.7	+0.6169	.5095	.2034	+84	− 4
B. A. C. 3579	6	+0.01	+3.6	+14 59.5	5 37.0	+ 3 33.7	+0.5525	.5075	−.2075	+78	− 8
i Leonis	6	0.02	3.5	14 47.3	7 24.6	+ 5 18.2	+0.4045	.5065	.2095	+67	−16
k Leonis	6	0.07	3.3	14 51.9	15 1.0	−11 18.3	−1.3035	.5027	.2170	−40	−75
ω Virginis	6	0.25	1.0	8 50.2	27 19 41.3	− 7 25.6	−1.1601	.4917	.2380	−23	−81
ν Virginis	4½	0.27	0.4	7 14.4	23 50.8	− 3 22.8	−0.3821	.4906	.2402	+23	−64
B. A. C. 3996	6	+0.28	+0.1	+ 5 54.0	28 1 41.2	− 1 35.4	+0.6639	.4902	−.2409	+87	− 7
b Virginis	6	0.31	−0.6	4 21.7	7 47.6	+ 4 21.2	+0.8907	.4891	.2433	+90	+ 5
B. A. C. 4104	6½	0.37	0.7	+ 4 45.6	14 25.6	+10 48.5	−1.1717	.4882	.2454	−24	−85
γ Virg., *mult.*	2½	0.47	3.1	− 0 45.2	29 7 27.1	+ 3 22.8	+0.7266	.4881	.2478	+86	− 5
B. A. C. 4277	6	0.48	3.2	0 52.7	8 31.1	+ 4 25.1	+0.6001	.4882	.2477	+81	−12
k Virginis	6	+0.55	−4.1	− 3 7.6	17 32.7	−10 47.9	+0.8422	.4895	−.2475	+87	+ 1
46 Virginis	6	0.56	4.1	2 41.2	18 4.5	−10 17.0	+0.2247	.4896	.2474	+55	−31
48 Virginis	6	0.58	4.2	2 58.8	19 55.8	− 8 28.7	+0.0898	.4900	.2472	+47	−38
θ Virgi., *mult.*	4½	0.59	4.9	4 51.7	23 17.8	− 5 12.1	+1.3277	.4907	.2468	+85	+39
65 Virginis	6	0.68	5.0	4 15.6	30 6 44.1	+ 2 2.1	−1.1623	.4929	.2449	−24	−90
66 Virginis	6	+0.69	−5.1	− 4 30.1	7 24.3	+ 2 41.1	−1.0627	.4931	−.2448	−16	−90
l^2 Virginis	5	0.72	5.6	5 36.0	11 30.1	+ 6 40.2	−0.8559	.4945	.2435	− 3	−90
m Virginis	6	0.77	6.5	8 3.8	16 45.2	+11 46.6	+0.5650	.4966	.2414	+75	−14
B. A. C. 4591	6	0.80	6.9	9 4.4	19 46.8	− 9 16.9	+0.9397	.4979	.2401	+81	+ 8
96 Virginis	6½	0.92	7.2	9 44.0	31 7 26.0	+ 2 2.5	−1.1018	.5040	.2334	−21	−90
λ Virginis	4½	+0.98	−8.4	−12 47.3	12 41.4	+ 7 8.7	+0.9947	.5072	−.2298	+77	+12
2 Libræ	6	+1.00	−7.9	−11 8.1	14 57.5	+ 9 20.9	−1.3143	.5088	−.2280	−43	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Red'ns from 1873.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
5 Libræ	6	+1.14	- 9.2	-14 55.5	1 2 24.1	- 3 33.0	+0.2297	.5170	-.2175	+49	-31
α^1 Libræ	6	1.17	9.4	15 28.2	4 45.6	- 1 15.8	+0.3059	.5188	.2150	+53	-27
α^2 Libræ	2½	1.17	9.4	15 30.9	4 51.3	- 1 10.2	+0.3331	.5189	.2149	+55	-25
ν^1 Libræ	6	1.28	9.4	15 45.9	12 36.1	+ 6 19.1	-1.0287	.5252	.2059	-21	-90
ν^2 Libræ	5½	1.28	9.4	15 59.6	12 41.5	+ 6 25.4	-0.8030	.5253	.2058	- 7	-90
28 Libræ	6	1.38	10.0	17 41.9	19 25.7	-11 3.3	-0.3379	.5310	.1972	+17	-63
B. A. C. 5109	6	+1.45	-10.4	-19 14.4	2 0 55.2	- 5 44.6	+0.2398	.5361	-.1894	+46	-30
41 Libræ	6	1.49	10.1	18 53.1	3 50.8	- 2 54.7	-0.6833	.5389	.1848	- 3	-90
κ Libræ	5	1.52	10.2	19 16.1	5 14.9	- 1 33.5	-0.5332	.5402	.1825	+ 5	-78
λ Libræ	6	1.58	10.1	19 47.3	10 25.6	+ 3 26.7	-0.9044	.5439	.1743	-17	-90
B. A. C. 5281	6	1.62	10.4	20 36.8	12 30.4	+ 5 27.3	-0.3909	.5471	.1702	+11	-67
δ Scorpii	2½	1.65	10.9	22 15.7	13 31.1	+ 6 25.9	+1 1738	.5479	.1684	+68	+30
ω^2 Scorpii	4½	+1.68	-10.1	-20 31.6	16 41.7	+ 9 29.9	-1.1776	.5513	-.1625	-39	-90
B. A. C. 5395	6	1.74	10.1	21 4.6	19 27.1	-11 50.5	-1.0380	.5541	.1572	-28	-90
ρ Ophi, *mult.*	5	1.83	10.5	23 9.3	3 0 33.8	- 6 54.7	+0.3621	.5592	.1469	+48	-23
18 Ophiuchi	6	1.99	10.0	24 25.0	10 44.7	+ 2 53.8	+0·2934	.5691	.1242	+41	-27
B. A. C. 5641	6½	2.00	10.0	24 36.9	11 24.6	+ 3 32.3	+0.4168	.5697	.1226	+48	-20
22 Ophiuchi	6½	2.02	9.4	23 18.2	12 53.2	+ 4 57.4	-1.1215	.5710	.1191	-40	-90
B. A. C. 5709	6	+2.06	- 9.8	-24 54.1	14 57.1	+ 6 56.7	+0.2931	.5732	-.1140	+40	-26
26 Ophiuchi	6	2.06	9.7	24 47.7	15 1.8	+ 7 1.2	+0.1751	.5732	.1138	+34	-33
A^1 Ophiuchi	5	2.18	9.4	26 25.0	21 11.6	-11 3.1	+1.1915	.5788	.0982	+64	+36
A^2 Ophiuchi	6	2.19	9.4	26 24.9	21 11.6	-11 3.1	+1.1907	.5788	.0982	+64	+37
38 Ophiuchi	6½	2.20	9.3	26 29.3	22 5.3	-10 11.4	+1.1784	.5796	.0959	+64	+35
39 Ophi., *mult.*	6	2.16	8.5	24 8.9	22 17.3	- 9 59.9	-1.2511	.5798	.0954	-56	-90
θ Ophiuchi	3½	+2.20	- 8.6	-24 52.4	23 52.1	- 8 28.8	-0.6521	.5811	-.0912	-12	-90
B. A. C. 5909	6½	2.27	8.5	26 10.3	4 3 41.9	- 4 48.0	+0.3544	.5845	.0808	+41	-23
B. A. C. 6024	6½	2.38	7.8	27 1.2	10 57.7	+ 2 10.4	+0.7060	.5901	.0604	+62	- 2
B. A. C. 6194	6	2.53	6.1	27 5.3	21 34.4	-11 38.9	+0.2997	.5972	-.0284	+33	-26
φ Sagittarii	3½	2.64	4.4	27 7.2	5 7 57.0	- 1 42.2	+0.2039	.6020	+.0043	+26	-31
σ Sagittarii	2½	2.67	3.6	26 27.2	11 32.9	+ 1 44.7	-0.4313	.6034	.0157	- 7	-71
τ Sagittarii	3½	+2.75	- 3.1	-27 51.3	15 51.5	+ 5 52.3	+1.0732	.6044	+.0298	+62	+25
B. A. C. 6562	6½	2.73	2.4	26 7.1	18 13.4	+ 8 8.2	-0.5871	.6049	.0373	-13	-86
ψ Sagittarii	6	2.71	2.1	25 28.4	19 5.5	+ 8 58.1	-1.1989	.6050	.0401	-54	-90
B. A. C. 6666	6	2.81	1.1	27 14.6	6 0 21.4	- 9 59 4	+0.8271	.6059	.0570	+63	+ 6
h^1 Sagittarii	6	2.77	0.4	24 59.7	2 41.0	- 7 45.7	-1.2741	.6060	.0647	-63	-90
h^2 Sagittarii	4½	2.77	- 0.4	25 9.7	2 55.6	- 7 31.7	-1.0922	.6059	.0654	-42	-90
ω Sagittarii	5	+2.85	+ 0.8	-26 38.0	9 58.3	- 0 46.9	+0.9137	.6053	+.0878	+63	+11
A Sagittarii	5	2.86	1.1	26 32.2	11 8.4	+ 0 20.2	+0.9215	.6052	.0914	+63	+12
B. A. C. 7077	6	2.87	3.9	25 22.2	23 49.2	-11 31.0	+1.1695	.6018	.1300	+65	+32
B. A. C. 7197	6	2.82	5.2	23 11.8	7 5 42.1	- 5 52.7	-0.1608	.5991	.1470	+19	-52
B. A. C. 7237	6	2.85	5.4	24 15.3	7 27.0	- 4 12.2	+1.1437	.5982	.1518	+66	+29
χ Capricorni	6	2.79	6.6	21 42.0	13 26.0	+ 1 32.1	-0.4153	.5950	.1681	+ 8	-69
27 Capricorni	6	+2.78	+ 6.8	-21 3.7	13 49.2	+ 1 54.2	-0.9777	.5948	+.1691	-24	-90
φ Capricorni	5½	2.78	7.1	21 10.5	16 10.0	+ 4 9.4	-0.4630	.5934	.1752	+ 6	-73
33 Capricorni	5½	2.77	7.9	21 23.3	19 28.2	+ 7 19.5	+0.3374	.5913	.1832	+49	-24
35 Capricorni	6	2.78	8.1	21 44.5	20 40.3	+ 8 28.7	+0.9065	.5906	.1861	+68	+ 9
37 Capricorni	6	2.76	8.6	20 38.8	23 39.7	+11 21.0	+0.3979	.5887	.1931	+53	-21
ε Capricorni	4½	2.74	8.8	20 1.9	8 0 32.5	-11 48.3	-0.0354	.5882	.1950	+30	-45
κ Capricorni	5	+2.73	+ 9.1	-19 26.5	2 44.4	- 9 41.6	-0.1798	.5865	+.2000	+23	-53
B. A. C. 7550	6	2.74	9.1	20 11.9	2 57.4	- 9 29.2	+0.6060	.5864	.2004	+66	-10
29 Aqua., *mult.*	6	2.66	10.4	17 34.3	10 39.6	- 2 5.0	-0.3615	.5811	.2165	+16	-64
56 Aquarii	6	2.57	12.0	15 13.9	22 2.8	+ 8 52.0	-0.0722	.5731	.2368	+33	-47
τ^1 Aqua., *mult.*	6	2.51	12.9	14 43.3	9 5 19.3	- 8 7.8	+1.1915	.5680	.2475	+75	+27
τ^2 Aquarii	4	+2.50	+13.0	-14 15.5	6 7.1	- 7 21.0	+0.9347	.5675	+.2486	+76	+ 8

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
74 Aquarii	6	+2.46	+13.0	−12 17.3	9 7 46.3	− 5 46.2	−0.5851	.5664	+.2508	+ 8	−81
ψ¹ Aquarii	4½	2.37	13.8	9 46.5	17 21.1	+ 3 27.7	−0.5977	.5601	.2613	+ 9	−81
ψ² Aquarii	4½	2.36	14.0	9 52.3	18 14.7	+ 4 19.4	−0.2695	.5596	.2621	+26	−58
ψ³ Aquarii	5	2.36	14.0	10 18.0	18 41.9	+ 4 45.6	+0.2711	.5593	.2626	+55	−29
B. A. C. 8214	6½	2.28	14.3	8 9.8	10 1 56.8	+11 45.1	+0.0936	.5549	.2683	+46	−38
B. A. C. 8274	6	2.22	14.6	7 4.9	7 42.0	− 6 41.8	+0.5829	.5518	.2717	+77	−13
27 Piscium	5½	+2.16	+14.5	− 4 15.4	12 14.0	− 2 19.2	−0.9681	.5495	+.2738	−10	−90
29 Piscium	5½	2.15	14.4	3 43.8	13 38.4	− 0 57.7	−1.1038	.5487	.2742	−19	−90
4 Ceti	6	2.12	14.6	3 15.1	16 17.9	+ 1 36.3	−0.8484	.5475	.2751	− 2	−90
5 Ceti	6	2.12	14.6	3 9.0	16 30.5	+ 1 48.5	−0.8903	.5474	.2751	− 5	−90
B. A. C. 5	6	2.12	14.5	2 55.5	16 44.5	+ 2 2.0	−1.0488	.5474	.2752	−15	−90
B. A. C. 81	6½	2.06	14.9	2 55.1	23 53.6	+ 8 56.4	+0.9166	.5445	.2763	+87	+ 6
10 Ceti	6	+2.03	+14.5	− 0 44.9	11 0 51.2	+ 9 52.2	−0.9696	.5441	+.2764	− 9	−90
14 Ceti	6½	2.00	14.7	1 12.0	4 55.6	−10 11.7	+0.6033	.5429	.2762	+81	−12
15 Ceti	6½	2.00	14.8	− 1 11.9	6 5.9	− 9 3.8	+0.9253	.5425	.2761	+89	+ 6
72 Pisc., *mult.*	6	1.85	14.1	+ 4 14.1	18 51.3	+ 3 16.0	−0.9942	.5396	.2726	−11	−86
B. A. C. 408	6½	1.79	14.4	4 4.6	12 2 41.7	+10 50.8	+1.2871	.5386	.2683	+90	+35
96 Piscium	6½	1.75	13.7	6 38.5	5 36.8	−10 19.8	−0.5134	.5384	.2664	+17	−72
μ Piscium	5	+1.75	+14.0	+ 5 29.5	6 7.8	− 9 49.9	+0.7823	.5383	+.2660	+90	− 1
B. A. C. 481	6½	1.72	13.7	6 59.9	8 51.6	− 7 11.4	−0.0130	.5382	.2640	+42	−42
ο Piscium	4	1.68	13.3	8 31.3	13 10.8	− 3 0.9	−0.4188	.5381	.2604	+21	−65
29 Arietis	6½	1.48	14.4	14 28.4	13 11 5.7	− 5 49.6	−1.0285	.5401	.2361	−14	−76
ο Arietis	6	1.43	11.3	14 46.5	16 26.5	− 0 39.6	−0.0974	.5411	.2287	+38	−42
σ Arietis	6	1.39	11.2	14 33.6	19 37.2	+ 2 24.8	+0.8441	.5418	.2240	+90	+ 8
53 Arietis	6	+1.32	+10.2	+17 23.5	14 2 50.2	+ 9 23.1	−0.5017	.5436	+.2125	+16	−63
13 Tauri	5½	1.17	9.4	19 17.7	18 30.8	+ 0 31.6	+0.6397	.5481	.1846	+85	+ 1
B. A. C. 1143	6	1.16	8.9	20 31.6	19 26.9	+ 1 25.8	−0.4755	.5484	.1827	+17	−58
32 Tauri	6	1.11	8.2	22 6.7	15 0 55.8	+ 6 43.3	−1.1657	.5500	.1720	−29	−68
A¹ Tauri	4½	1.08	8.3	21 44.1	4 24.2	+10 4.5	−0.1863	.5509	.1648	+33	−40
A² Tauri	6	1.08	8.4	21 40.0	4 41.0	+10 20.7	−0.0686	.5510	.1642	+39	−34
56 Tauri	6	+1.02	+ 8.3	+21 28.0	10 59.3	− 7 34.3	+1.1358	.5527	+.1507	+90	+37
62 Tauri	6	1.01	7.4	24 0.3	12 51.4	− 5 46.2	−1.2636	.5533	.1467	−43	−66
κ¹ Tauri	4½	1.01	8.0	22 0.2	13 29.9	− 5 9.0	+0.9437	.5535	.1451	+90	+23
κ² Tauri	6½	1.01	8.1	21 54.6	13 31.2	− 5 7.7	+1.0450	.5535	.1451	+90	+30
υ¹ Tauri	4½	1.00	7.9	22 31.5	13 53.8	− 4 45.9	+0.4497	.5536	.1412	+72	− 5
υ² Tauri	6	1.00	7.8	22 42.6	14 19.8	− 4 20.9	+0.3173	.5538	.1432	+62	−12
τ Tauri	4½	+0.95	+ 7.6	+22 42.8	20 51.6	+ 1 57.1	+1.2048	.5555	+.1224	+90	+46
B. A. C. 1518	6	0.89	6.9	24 23.2	16 2 54.6	+ 7 47.2	+0.1640	.5569	.1143	+53	−16
99 Tauri	6	0.89	7.1	23 45.0	3 35.8	+ 8 26.9	+0.9200	.5570	.1120	+90	+25
k Tauri	5½	0.89	6.7	24 51.2	3 43.0	+ 8 33.9	−0.2408	.5570	.1123	+29	−37
103 Tauri	6	0.85	6.8	24 5.8	8 2.6	−11 15.8	+1.0301	.5579	.1020	+90	+33
118 Tauri	6	0.77	6.3	25 2.8	17 8.7	− 2 29.3	+0.8459	.5595	.0795	+90	+24
125 Tauri	6	+0.72	+ 5.9	+25 49.5	21 37.4	+ 1 49.8	+0.3430	.5600	+.0683	+65	− 3
136 Tauri	5	0.68	5.1	27 34.9	17 3 25.1	+ 7 24.9	−1.1921	.5601	.0534	−38	−62
139 Tauri	5½	0.65	5.7	25 56.2	5 28.1	+ 9 23.4	+0.6803	.5602	.0416	+90	+17
49 Aurigae	5½	0.53	4.6	28 7.2	21 26.0	+ 0 46.9	−1.2385	.5592	+.0071	−47	−62
39 Geminor.	6	0.45	4.9	26 14.8	18 7 43.9	+10 42.7	+0.7313	.5573	−.0193	+90	+23
40 Geminor.	6½	0.45	4.9	26 5.1	8 1.1	+10 59.4	+0.9020	.5572	.0200	+90	+33
47 Geminor.	6	+0.42	+ 4.4	+27 3.9	13 12.4	− 8 0.4	−0.3013	.5558	−.0331	+26	−34
υ Geminorum	4½	0.35	4.1	27 10.6	19 0 2.7	+ 2 27.1	−0.9290	.5522	.0595	−13	−63
c Geminorum	6	0.33	4.2	26 5.1	3 43.7	+ 6 0.4	+0.0300	.5508	.0683	+45	−19
ω¹ Cancri	6	0.29	4.1	25 44.4	11 18.8	−10 40.1	−0.1762	.5473	.0858	+33	−31
ω² Cancri	6½	0.29	4.1	25 26.3	11 41.1	−10 18.6	+0.1232	.5473	.0866	+30	−16
ψ¹ Cancri	6½	+0.27	+ 3.9	+26 13.0	15 32.0	− 6 35.5	−1.0842	.5453	−.0953	−25	−64

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0 Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ψ² Cancri	6	+0.27	+ 3.9	+25 53.5	19 15 39.2	− 6 28.6	−0.7376	.5453	−.0956	+ 1	−63
λ Cancri	6	0.25	4.1	24 25.3	20 19.0	− 1 58.2	+0.4097	.5430	.1058	+69	− 4
υ¹ Cancri, *mult.*	7	0.24	3.9	24 56.9	23 8.5	+ 0 45.7	−0.4782	.5415	.1117	+16	−51
υ² Cancri	6½	0.24	4.0	24 33.9	20 0 3.3	+ 1 38.7	−0.1592	.5410	.1137	+84	−33
υ³ Cancri	6	0.23	4.0	24 30.5	1 24.5	+ 2 57.2	−0.2520	.5402	.1165	+29	−39
32 Cancri	6	0.23	4.0	24 31.0	2 6.2	+ 3 37.5	−0.3423	.5398	.1179	+24	−44
ξ Cancri	5	+0.16	+ 3.6	+22 33.5	19 26.8	− 3 35.6	−0.5246	.5298	+.1516	+14	−58
79 Cancri	6	0.16	3.6	22 30.6	19 55.8	− 3 7.6	−0.5450	.5295	.1521	+13	−60
B. A. C. 3138	6	0.16	3.7	21 48.4	21 32.2	− 1 34.2	−0.0134	.5284	.1550	+42	−31
ω Virginis	6	0.16	0.6	8 50.2	24 2 1.9	+ 0 42.5	−1.3298	.4920	.2403	−40	−81
ν Virginis	4½	0.16	+ 0.4	7 14.4	6 11.8	+ 4 45.7	−0.5598	.4910	.2424	+14	−75
B. A. C. 3996	6	0.16	0.0	5 54.0	8 2.3	+ 6 33.2	+0.4842	.4907	.2432	+72	−17
b Virginis	6	+0.18	− 0.4	+ 4 21.7	14 9.2	−11 29.7	+0.6988	.4895	−.2455	+90	− 6
10 Virginis	6	0.20	0.8	2 36.6	19 40.0	− 6 7.7	+1.2871	.4888	.2472	+90	+34
B. A. C. 4104	6½	0.22	0.5	+ 4 45.7	20 47.8	− 5 1.8	−1.3813	.4887	.2475	−46	−85
γ Virg., *mult.*	2½	0.28	2.2	− 0 45.2	25 13 51.8	+11 34.9	+0.4915	.4882	.2493	+72	−18
B. A. C. 4277	6	0.28	2.3	0 52.7	14 56.0	−11 22.6	+0.3630	.4883	.2493	+64	−24
38 Virginis	6	0.29	2.9	2 52.0	20 21.5	− 6 5.7	+1.2106	.4888	.2494	+87	+26
k Virginis	6	+0.32	− 3.1	− 3 7.6	23 59.7	− 2 33.4	+0.5924	.4892	−.2490	+80	−12
46 Virginis	6	0.32	3.0	2 41.2	26 0 31.7	− 2 2.2	−0.0287	.4893	.2489	+41	−45
48 Virginis	6	0.33	3.2	2 58.8	2 23.5	− 0 13.5	−0.1662	.4900	.2485	+34	−52
θ Virg., *mult.*	4½	0.34	3.7	4 51.7	5 46.5	+ 3 4.2	+1.0723	.4902	.2479	+85	+16
66 Virginis	6	0.41	3.9	4 30.0	13 56.1	+11 0.5	−1.3400	.4920	.2458	−41	−90
*l*² Virginis	5	+0.45	− 4.4	− 5 36.0	18 3.6	− 8 58.8	−1.1368	.4932	−.2442	−22	−90
m Virginis	6	0.47	5.2	8 3.8	23 21.2	− 3 49.9	+0.2878	.4950	.2430	+57	−28
B. A. C. 4591	6	0.49	5.5	9 4.4	27 2 24.4	− 0 51.7	+0.6622	.4962	.2403	+80	− 9
λ Virginis	4½	0.64	7.1	12 47.2	19 30.4	− 8 14.6	+0.7081	.5042	.2289	+77	− 6
5 Libræ	6	0.78	8.0	14 55.5	28 9 25.3	+ 5 16.1	−0.0660	.5126	.2162	+34	−47
α¹ Libræ	6	+0.80	− 8.2	15 28.2	11 49.1	+ 7 35.3	+0.0111	.5143	−.2137	+38	−43
α² Libræ	2½	0.80	8.2	15 30.9	11 54.9	+ 7 41.0	+0.0387	.5143	.2136	+39	−41
ν¹ Libræ	6	0.90	8.6	15 45.9	19 48.1	− 8 40.3	−1.3360	.5201	.2044	−52	−90
ν² Libræ	5½	0.90	8.6	15 59.6	19 53.5	− 8 35.0	−1.1082	.5201	.2043	−27	−90
28 Libræ	6	0.98	9.0	17 41.9	29 2 45.6	− 1 55.7	−0.6371	.5256	.1951	+ 1	−57
B. A. C. 5109	6	+1.06	− 9.5	−19 14.3	8 22.1	+ 3 30.0	−0.0507	.5300	−.1869	+30	−46
41 Libræ	6	1.10	9.3	18 53.1	11 21.6	+ 6 23.7	−0.9831	.5324	.1824	−20	−90
κ Libræ	5	1.12	9.4	19 16.1	12 47.5	+ 7 46.9	−0.8308	.5337	.1802	−11	−90
λ Libræ	6	1.21	9.5	19 47.3	18 5.4	−11 5.7	−1.2034	.5381	.1713	−40	−90
B. A. C. 5281	6	1.24	9.8	20 36.8	20 13.3	− 9 2.1	−0.6818	.5399	.1677	− 5	−90
MARS				−22 7.1	20 13.8	− 9 1.6	+0.9241	.5399	−.1677	+68	+10
δ Scorpii	2½	+1.28	−10.2	22 15.7	21 15.4	− 8 2.1	+0.9028	.5408	.1658	+68	+ 8
19 Scorpii	6	1.41	10.5	23 51.8	30 6 22.5	+ 0 46.3	+1.1663	.5491	.1487	+66	+30
ρ Ophi., *mult.*	5	1.43	10.1	23 9.3	8 35.0	+ 2 54.3	+0.0910	.5510	.1443	+33	−38
25 Scorpii	6	1.59	10.4	25 18.0	17 47.0	+11 46.6	+1.1169	.5593	.1245	+65	+27
18 Ophiuchi	6	+1.61	−10.0	−24 25.0	19 2.3	−11 0.8	+0.0322	.5603	−.1216	+27	−41
B. A. C. 5641	6½	1.62	10.0	24 36.9	19 43.4	−10 21.2	+0.1580	.5610	.1200	+34	−34
B. A. C. 5709	6	1.71	9.9	24 54.1	23 21.8	− 6 50.8	+0.0368	.5641	.1116	+26	−41
26 Ophiuchi	6	1.71	9.9	24 47.7	23 26.6	− 6 46.2	−0.0826	.5643	.1110	+20	−48
A¹ Ophiuchi	5	1.81	9.9	26 25.0	31 5 46.9	− 0 40.0	+0.9561	.5695	.0957	+64	+14
A² Ophiuchi	6	+1.81	− 9.3	−26 24.9	5 47.3	− 0 39.6	+0.9541	.5695	−.0957	+64	+14
38 Ophiuchi	6½	1.83	9.8	26 29.3	6 42.1	+ 0 13.1	+0.9438	.5704	.0933	+64	+13
θ Ophiuchi	3½	1.84	9.1	24 52.4	8 32.0	+ 1 58.9	−0.9099	.5719	.0886	−27	−90
B. A. C. 5909	6½	1.91	9.1	26 10.4	12 28.4	+ 5 46.3	+0.1159	.5750	.0783	+27	−37
B. A. C. 6024	6½	+2.07	− 8.5	−27 1.2	19 56.8	−11 2.5	+0.4832	.5804	−.0581	+47	−16

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6194	6	+2.23	− 7.1	−27 5.3	1 6 51.8	− 0 33.4	+0.0882	.5873	−.0266	+21	−38
φ Sagittarii	3½	2.39	5.6	27 7.2	17 31.9	+ 9 40.7	+0.0085	.5925	+.0076	+15	−43
σ Sagittarii	2½	2.46	4.7	26 27.2	21 13.7	−10 46.5	−0.6281	.5937	.0153	−17	−90
τ Sagittarii	3½	2.55	4.4	27 51.3	2 1 39.1	− 6 32.1	+0.9028	.5952	.0322	+62	+11
B. A. C. 6562	6½	2.55	3.5	26 7.2	4 4.6	− 4 12.5	−0.7723	.5958	.0374	−23	−90
B. A. C. 6666	6	2.64	2.8	27 14.7	10 21.8	+ 1 49.0	+0.6703	.5969	.0588	+60	− 5
h^2 Sagittarii	4½	+2.64	− 1.8	−25 9.7	12 59.7	+ 4 20.5	−1.2644	.5973	+.0664	−59	−90
ω Sagittarii	5	2.77	0.7	26 38.1	20 12.0	+11 14.9	+0.7768	.5974	.0886	+64	+ 2
A Sagittarii	5	2.78	− 0.4	26 32.2	21 23.6	−11 36.5	+0.7869	.5972	.0930	+64	+ 2
B. A. C. 7077	6	2.86	+ 2.3	25 22.2	3 10 19.1	+ 0 47.0	+1.0632	.5953	.1308	+65	+22
B. A. C. 7197	6	2.85	3.9	23 11.8	16 17.7	+ 6 31.1	−0.2621	.5933	.1478	+14	−59
B. A. C. 7237	6	2.90	4.0	24 15.3	18 4.1	+ 8 13.1	+1.0541	.5928	.1528	+66	+20
χ Capricorni	6	+2.87	+ 5.9	−21 42.0	4 0 7.8	− 9 57.9	−0.4984	.5903	+.1690	+ 4	−76
27 Capricorni	6	2.86	6.1	21 3.8	0 31.2	− 9 35.5	−1.0622	.5901	.1704	−30	−90
φ Capricorni	5½	2.88	6.5	21 10.5	2 53.6	− 7 18.8	−0.5394	.5891	.1762	+ 3	−79
33 Capricorni	5½	2.90	7.1	21 23.3	6 13.9	− 4 6.5	+0.2727	.5876	.1842	+46	−28
35 Capricorni	6	2.91	7.1	21 44.5	7 26.5	− 2 56.8	+0.8466	.5870	.1878	+68	+ 4
37 Capricorni	6	2.90	7.9	20 38.8	10 27.4	− 0 3.1	+0.3440	.5853	.1949	+50	−25
ε Capricorni	4½	+2.89	+ 8.1	−20 1.9	11 20.6	+ 0 48.0	−0.0880	.5853	+.1964	+28	−49
κ Capricorni	5	2.89	8.6	19 26.5	13 33.4	+ 2 55.6	−0.2267	.5845	.2019	+21	−56
B. A. C. 7550	6	2.90	8.5	20 11.9	13 46.4	+ 3 8.0	+0.5612	.5841	.2023	+64	−12
29 Aqua., *mult.*	6	2.87	10.3	17 34.4	21 30.7	+10 34.2	−0.3866	.5797	.2190	+15	−66
56 Aquarii	6	2.83	12.3	15 13.8	5 8 53.8	− 2 28.8	−0.0654	.5732	.2397	+34	−47
τ^1 Aqua., *mult.*	6	2.83	13.5	14 43.3	16 8.4	+ 4 29.5	+1.2126	.5694	.2448	+76	+29
τ^2 Aquarii	4	+2.83	+13.6	−14 15.5	16 55.9	+ 5 15.2	+0.9605	.5686	+.2525	+76	+ 9
74 Aquarii	6	2.79	13.9	12 17.3	18 34.5	+ 6 50.2	−0.5479	.5679	.2543	−11	−78
ψ^1 Aquarii	4½	2.73	15.2	9 46.5	6 4 3.9	− 8 1.3	−0.5325	.5633	.2655	+13	−76
ψ^2 Aquarii	4½	2.74	15.3	9 52.3	4 56.8	− 7 10.3	−0.2036	.5623	.2664	+30	−55
ψ^3 Aquarii	5	2.74	15.3	10 18.0	5 23.7	− 6 44.4	+0.3345	.5623	.2670	+59	−26
B. A. C. 8214	6½	2.70	16.1	8 9.8	12 32.6	+ 0 9.1	+0.1785	.5591	.2732	+51	−34
B. A. C. 8274	6	+2.68	+16.7	− 7 4.9	18 12.1	+ 5 36.5	+0.6789	.5567	+.2768	+83	− 8
27 Piscium	5½	2.63	16.8	4 15.4	22 39.2	+ 9 54.1	−0.8455	.5548	.2792	− 2	−90
29 Piscium	5½	2.62	16.9	3 43.8	7 0 1.8	+11 13.7	−0.9754	.5545	.2798	−10	−90
4 Ceti	6	2.62	17.1	3 15.0	2 38.1	−10 15.4	−0.7155	.5536	.2807	+ 6	−90
5 Ceti	6	2.61	17.1	3 9.0	2 50.4	−10 3.5	−0.7565	.5536	.2808	+ 3	−90
B. A. C. 5	6	2.60	17.1	2 55.5	3 4.1	− 9 50.4	−0.9126	.5535	.2808	− 6	−90
B. A. C. 81	6½	+2.58	+17.7	− 2 55.0	10 3.6	− 3 5.4	+1.0498	.5514	+.2822	+87	+14
10 Ceti	6	2.56	17.5	0 44.9	11 0.0	− 2 11.0	−0.8126	.5511	.2823	+ 1	−90
14 Ceti	6½	2.54	17.9	1 11.9	14 58.4	+ 1 39.1	+0.7514	.5502	.2822	+83	− 4
15 Ceti	6½	2.55	17.9	− 1 11.8	16 6.8	+ 2 45.2	+1.0723	.5499	.2822	+89	+16
77 Pisc., *mult.*	6	2.45	17.6	+ 4 14.2	8 4 31.4	− 9 15.8	−0.7936	.5478	.2787	+ 2	−74
ε Piscium	5½	2.44	17.5	4 58.9	5 40.9	− 8 8.7	−1.2086	.5478	.2783	−26	−85
96 Piscium	6½	+2.39	+17.5	+ 6 38.6	14 57.6	+ 0 48.9	−0.2985	.5471	+.2727	+28	−59
μ Piscium	5	2.39	17.8	5 29.6	15 27.6	+ 1 17.9	+0.9793	.5471	.2716	+90	+11
B. A. C. 481	6½	2.38	17.5	7 0.0	18 6.3	+ 3 51.2	+0.2002	.5471	.2702	+54	−32
ο Piscium	4	2.35	17.1	8 31.3	22 17.3	+ 7 53.6	−0.1921	.5471	.2666	+33	−52
29 Arietis	6½	2.24	15.4	14 28.5	9 19 29.2	+ 4 21.7	−0.7637	.5493	.2412	+ 3	−73
ο Arietis	6	2.21	15.1	14 46.6	10 0 39.4	+ 9 21.2	+0.1576	.5503	.2334	+52	−30
σ Arietis	6	+2.18	+15.1	+14 33.7	3 43.9	−11 40.7	+1.0877	.5508	+.2285	+90	+24
53 Arietis	6	2.14	14.0	17 23.5	10 42.8	− 4 56.5	−0.2330	.5523	.2166	+31	−48
54 Arietis	6½	2.15	13.8	18 18.6	11 6.0	− 4 34.1	−1.0849	.5523	.2162	−19	−72
13 Tauri	5½	2.05	12.7	19 17.7	11 1 54.5	+ 9 42.9	+0.8980	.5558	.1876	+90	+16
B. A. C. 1143	6	2.03	12.2	20 31.6	2 48.9	+10 35.4	−0.2010	.5569	.1857	+32	−43
32 Tauri	6	+2.00	+11.4	+22 6.8	8 8.4	− 8 16.5	−0.8812	.5573	+.1746	− 7	−68

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	° ″	° ′	d h m	h m				°	°
A^1 Tauri	4½	+1.97	+11.3	+21 44.1	11 11 31.0	− 5 1.2	+0.0849	.5581	+.1668	+48	−26
A^2 Tauri	6	1.96	11.3	21 40.0	11 47.3	− 4 45.5	+0.2013	.5582	.1664	+55	−20
62 Tauri	6	1.92	10.0	24 0.4	19 44.7	+ 2 54.6	−0.9797	.5600	.1483	−44	−66
κ^1 Tauri	4½	1.89	10.6	22 0.2	20 22.2	+ 3 30.8	+1.2001	.5600	.1464	+90	+43
κ^2 Tauri	6½	1.89	10.6	21 54.6	20 23.5	+ 3 32.0	+1.3002	.5600	.1464	+90	+58
υ^1 Tauri	4½	1.89	10.3	22 31.6	20 45.5	+ 3 53.3	+0.7127	.5600	.1459	+90	+ 9
ι^2 Tauri	6	+1.88	+10.3	+22 42.6	21 10.9	+ 4 17.8	+0.5817	.5603	+.1451	+84	+ 2
B. A. C. 1518	6	1.80	8.8	24 23.3	12 9 27.9	− 7 52.1	+0.4270	.5621	.1148	+71	− 3
99 Tauri	6	1.77	9.0	23 45.0	10 8.2	− 7 13.2	+1.1744	.5621	.1136	+90	+44
k Tauri	5½	1.78	8.6	24 51.3	10 15.3	− 7 6.4	+0.0263	.5621	.1133	+45	−23
103 Tauri	6	1.74	8.6	24 5.8	14 29.5	− 3 1.5	+1.2820	.5625	.1021	+90	+60
118 Tauri	6	1.66	7.6	25 2.8	23 25.2	+ 5 34.6	+1.0955	.5630	.0791	+90	+41
125 Tauri	6	+1.61	+ 6.9	+25 49.5	13 3 49.5	+ 9 49.3	+0.5954	.5630	+.0679	+87	+10
136 Tauri	5	1.58	5.8	27 34.9	9 31.8	− 8 41.0	−0.9317	.5629	.0527	−13	−63
139 Tauri	5½	1.53	6.2	25 56.2	11 33.0	− 6 44.2	+0.9258	.5627	.0474	+90	+31
B. A. C 2097	6½	1.42	4.3	28 17.6	14 1 15.5	+ 6 28.2	−1.1992	.5607	.0117	−40	−62
49 Aurigae	5½	1.40	4.2	28 7.2	3 19.9	+ 8 28.2	−0.9952	.5601	.0063	−18	−62
54 Aurigae	6	1.38	3.9	28 22.4	5 11.4	+10 15.6	−1.2630	.5596	+.0013	−54	−62
39 Geminor.	6½	+1.27	+ 4.0	+26 14.8	13 32.9	− 5 40.9	+0.9543	.5573	−.0206	+90	+36
40 Geminor.	6½	1.27	4.1	26 5.1	13 50.0	− 5 24.4	+1.1241	.5573	.0212	+90	+48
47 Geminor.	6	1.22	3.3	27 3.8	18 59.5	− 0 25.9	−0.0802	.5555	.0342	+39	−22
59 Geminor.	6½	1.17	2.7	27 52.9	15 0 44.5	+ 5 6.9	−1.2086	.5530	.0486	−40	−62
ν Geminorum	4½	1.12	2.5	27 10.6	5 47.3	+ 9 59.1	−0.7183	.5508	.0609	+ 2	−63
c Geminorum	6	1.07	2.5	26 5.1	9 27.8	−10 28.1	+0.2328	.5492	.0699	+57	− 9
ϕ Geminorum	5	+1.04	+ 2.0	+27 5.6	13 39.0	− 6 25.5	−1.1817	.5473	−.0795	−35	−63
ω^1 Cancri	6	1.00	2.1	25 44.4	17 2.3	− 3 9.3	+0.0170	.5456	.0872	+44	−22
ω^2 Cancri	6½	1.00	2.2	25 26.2	17 24.7	− 2 47.6	+0.3152	.5453	.0883	+63	− 7
ψ^1 Cancri	6½	0.97	1.7	26 13.0	21 15.6	+ 0 55.4	−0.8954	.5435	.0964	− 9	−64
ψ^2 Cancri	6½	0.97	1.7	25 53.5	21 22.8	+ 1 2.4	−0.5497	.5431	.0972	+12	−55
λ Cancri	6	0.91	1.9	24 25.2	16 2 2.7	+ 5 32.9	+0.5890	.5408	.1069	+85	+ 6
υ^1 Cancri, *mult.*	7	+0.89	+ 1.5	+24 56.9	4 52.5	+ 8 17.0	−0.3018	.5390	−.1130	+26	−41
υ^2 Cancri	6½	0.88	1.5	24 33.9	5 47.3	+ 9 10.0	+0.0154	.5384	.1149	+44	−25
υ^3 Cancri	6	0.87	1.5	24 30.5	7 8.7	+10 28.7	−0.0796	.5379	.1176	+39	−30
32 Cancri	6	0.86	1.5	24 30.9	7 50.5	+11 9.1	−0.1707	.5374	.1191	+34	−35
ξ Cancri	5	0.71	0.9	22 33.5	17 1 13.9	+ 3 58.8	−0.3816	.5272	.1523	+22	−50
79 Cancri	6	0.71	0.9	22 30.6	1 42.9	+ 4 26.9	−0.4032	.5267	.1534	+21	−52
B. A. C. 3138	6	+0.69	+ 1.0	+21 48.3	3 19.7	+ 6 0.7	+0.1268	.5260	−.1569	+51	−23
B. A. C. 3292	6½	0.58	0.5	20 52.2	15 54.2	− 5 48.2	−0.9358	.5187	.1768	−10	−69
η Leonis	3½	0.48	0.5	17 22.9	18 6 30.0	+ 8 21.4	+0.1990	.5107	.1976	+55	−25
42 Leonis	6	0.44	0.5	15 36.9	14 7.6	− 8 14.3	+0.6187	.5071	.2069	+85	− 5
B. A. C. 3579	6	0.42	0.4	14 59.5	17 49.8	− 4 38.5	+0.5373	.5054	.2112	+77	−10
i Leonis	6	0.41	+ 0.3	14 47.3	19 38.0	− 2 53.5	+0.3808	.5043	.2132	+66	−18
k Leonis	6	+0.38	0.0	+14 51.9	19 3 16.8	+ 4 32.3	−1.3619	.5014	−.2210	−49	−75
k Virginis	5	0.25	− 3.0	− 3 7.6	22 5 55.4	+ 5 9.8	+0.4681	.4903	.2515	+71	−19
46 Virginis	6	0.25	3.1	2 41.1	6 27.1	+ 5 40.6	−0.1525	.4905	.2514	+35	−52
48 Virginis	6	0.25	3.1	2 58.8	8 18.5	+ 7 29.0	−0.2936	.4908	.2511	+28	−60
θ Virg., *mult.*	4½	0.26	3.4	4 51.7	11 41.2	+10 46.3	+0.9399	.4914	.2504	+85	+ 7
l^2 Virginis	5	0.29	4.1	5 36.0	23 56.2	− 1 18.8	−1.2921	.4946	.2466	−35	−90
m Virginis	6	+0.29	− 4.6	− 8 3.8	23 5 13.2	+ 3 49.5	+0.1247	.4961	−.2442	+48	−37
B. A. C. 4591	6	0.31	4.9	9 4.4	8 16.1	+ 6 47.4	+0.1948	.4972	.2427	+70	−18
ι Virginis	4½	0.38	6.0	12 47.2	24 1 21.1	− 0 36.5	+0.5182	.5048	.2309	+69	−16
5 Libræ	6	0.47	6.9	14 55.5	15 17.1	−11 5.0	−0.2735	.5127	.2175	+24	−59
α^1 Libræ	6	0.48	7.0	15 28.2	17 41.3	− 8 45.1	−0.1986	.5144	.2147	+27	−55
α^2 Libræ	2½	+0.48	− 7.1	−15 30.9	17 47.2	− 8 39.4	−0.1710	.5145	−.2146	+28	−53

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Red'ns from 1873.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ν^2 Libræ	5½	+0.56	− 7.4	−15 59.6	25 1 47.8	− 0 53.3	−1.3298	.5196	−.2050	−50	−90
28 Libræ	6	0.63	8.0	17 41.9	8 42.2	+ 5 48.3	−0.8620	.5244	.1957	−11	−90
B. A. C. 5109	6	0.68	8.3	19 14.3	14 21.1	+11 16.5	−0.2755	.5281	.1877	+19	−60
41 Libræ	6	0.72	8.3	18 53.0	17 22.1	− 9 48.3	−1.2159	.5309	.1822	−39	−90
κ Libræ	5	0.74	8.3	19 16.1	18 48.8	− 8 24.4	−1.0632	.5317	.1803	−27	−90
B. A. C. 5281	6	0.82	8.7	20 36.8	26 2 19.1	− 1 8.9	−0.9166	.5373	.1677	−18	−90
δ Scorpii	2½	+0.84	− 9.2	−22 15.6	3 22.0	− 0 8.0	+0.6772	.5389	−.1648	+67	− 6
B. A. C. 5354	6½	0.88	9.4	23 21.3	7 12.6	+ 3 34.8	+1.2314	.5411	.1588	+67	+37
19 Scorpii	6	0.95	9.6	23 51.8	12 36.3	+ 8 47.6	+0.9456	.5455	.1481	+66	+11
ρ Ophi., *mult.*	5	0.99	9.3	23 9.3	14 50.7	+10 57.4	−0.1401	.5471	.1436	+21	−51
25 Scorpii	6	1.13	9.8	25 18.0	27 0 11.8	− 4 1.0	+0.8970	.5542	.1238	+65	+ 9
18 Ophiuchi	6	1.15	9.4	24 25.0	1 28.6	− 2 46.9	−0.1996	.5555	.1203	+15	−55
B. A. C. 5641	6½	+1.16	− 9.5	−24 36.9	2 10.4	− 2 6.6	−0.0722	.5555	−.1193	+22	−48
B. A. C. 5709	6	1.22	9.3	24 54.1	5 53.0	+ 1 28.0	−0.1943	.5585	.1106	+15	−55
26 Ophiuchi	6	1.22	9.3	24 47.7	5 57.9	+ 1 32.7	−0.3152	.5586	.1104	+ 9	−63
B. A. C. 5800	6½	1.32	9.7	26 50.0	11 55.2	+ 7 17.1	+1.2274	.5629	.0961	+63	+41
A^1 Ophiuchi	5	1.32	9.5	26 25.0	12 26.1	+ 7 46.8	+0.7376	.5632	.0945	+63	− 1
A^2 Ophiuchi	6	1.31	9.6	26 24.9	12 27.9	+ 7 48.6	+0.7337	.5634	.0945	+64	− 1
38 Ophiuchi	6½	+1.33	− 9.5	−26 29.3	13 22.6	+ 8 41.2	+0.7256	.5639	−.0920	+64	− 2
Mars				24 55.6	14 14.7	+ 9 31.4	−1.0079	.5358	.0877	−33	−90
θ Ophiuchi	3½	1.36	8.8	24 52.4	15 14.9	+10 29.4	−1.1508	.5648	.0880	−45	−90
B. A. C. 5909	6½	1.44	9.0	26 10.3	19 16.8	− 9 37.7	−0.1110	.5675	.0778	+16	−50
3 Sagittarii	5	1.56	9.2	27 46.9	28 1 46.4	− 3 22.8	+1.1337	.5717	.0602	+63	+30
B. A. C. 6024	6½	1.57	8.8	27 1.2	2 56.4	− 2 15.4	+0.2644	.5725	.0571	+34	−28
B. A. C. 6063	6½	+1.64	− 8.9	−28 2.8	5 30.4	+ 0 12.8	+1.2025	.5740	−.0498	+62	+39
B. A. C. 6191	6½	1.77	8.2	28 19.6	13 51.3	+ 8 14.3	+1.1700	.5781	.0266	+62	+35
B. A. C. 6194	6	1.76	7.8	27 5.3	14 9.4	+ 8 31.8	−0.1303	.5781	−.0269	+10	−51
φ Sagittarii	3½	1.96	6.5	27 7.2	29 1 8.7	− 4 54.8	−0.2037	.5824	+.0060	+ 4	−56
σ Sagittarii	2½	2.01	5.9	26 27.2	4 57.6	− 1 14.8	−0.8478	.5836	.0175	−29	−90
τ Sagittarii	3½	2.10	5.8	27 51.3	9 31.6	+ 3 8.3	+0.7110	.5847	.0315	+61	− 2
B. A. C. 6562	6½	+2.11	− 4.8	−26 7.2	12 1.9	+ 5 32.6	−0.9890	.5852	+.0386	−37	−90
B. A. C. 6628	6	2.22	4.8	28 6.6	16 24.6	+ 9 44.9	+1.2549	.5856	.0521	+62	+49
B. A. C. 6666	6	2.23	4.3	27 14.7	18 31.7	+11 46.9	+0.4826	.5860	.0584	+47	−16
ω Sagittarii	5	2.37	2.4	26 38.1	30 4 42.2	− 2 27.1	+0.6008	.5859	.0884	+57	− 9
A Sagittarii	5	2.39	2.2	26 32.3	5 56.3	− 1 16.0	+0.6125	.5857	.0918	+57	+ 9
B. A. C. 7077	6	+2.56	+ 0.6	−25 22.2	19 18.7	+11 34.6	+0.9089	.5837	+.1296	+65	+ 9

OCTOBER.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
B. A. C. 7197	6	+2.58	+ 2.3	−23 11.9	1 1 29.7	− 6 29.1	−0.4299	.5821	+.1471	+ 6	−71
B. A. C. 7237	6	2.62	2.3	24 15.4	3 19.7	− 4 43.4	+0.9097	.5817	.1512	+66	+ 9
χ Capricorni	6	2.63	4.2	21 42.1	9 35.6	+ 1 17.8	−0.6581	.5796	.1678	− 4	−90
27 Capricorni	6	2.62	4.5	21 3.8	9 59.8	+ 1 41.1	−1.2300	.5790	.1686	−45	−90
φ Capricorni	5½	2.65	4.8	21 10.5	12 26.9	+ 4 2.5	−0.6950	.5786	.1749	− 6	−90
33 Capricorni	5½	2.69	5.4	21 23.3	15 53.6	+ 7 21.1	+0.1343	.5770	.1829	+38	−36
35 Capricorni	6	+2.72	+ 5.4	−21 44.5	17 8.6	+ 8 33.3	+0.7185	.5768	+.1857	+69	− 4
37 Capricorni	6	2.71	6.4	20 38.8	20 15.1	+11 32.6	+0.2110	.5754	.1929	+43	−32
ε Capricorni	4½	2.71	6.7	20 1.9	21 9.9	−11 34.6	−0.2229	.5750	.1949	+21	−56
κ Capricorni	5	2.71	7.2	19 26.5	23 26.8	− 9 23.0	−0.3592	.5740	.2005	+15	−65
B. A. C. 7550	6	2.73	7.1	20 11.9	23 40.2	− 9 10.1	+0.4393	.5740	.2008	+57	−20
29 Aqua., *mult.*	6	+2.75	+ 9.0	−17 34.4	2 7 38.0	− 1 30.3	−0.5068	.5706	+.2174	+ 9	−76
56 Aquarii	6	2.80	11.3	15 13.8	19 18.9	+ 9 44.5	−0.1590	.5657	.2380	+29	−52
τ^1 Aqua., *mult.*	6	2.83	12.5	14 43.3	3 2 43.4	− 7 7.3	+1.1482	.5625	.2501	+76	+23
τ^2 Aquarii	4	2.83	12.6	14 15.5	3 31.9	− 6 20.5	+0.8935	.5621	.2513	+76	+ 5
74 Aquarii	6	+2.80	+13.2	−12 17.3	5 12.5	− 4 43.8	−0.6252	.5616	+.2533	+ 7	−55

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ψ^1 Aquarii	4½	+2.81	+14.8	- 9 46.5	3 14 52.2	+ 4 35.2	-0.5876	.5581	+.2654	+11	-81
ψ^2 Aquarii	4½	2.82	14.9	9 52.3	15 46.0	+ 5 27.1	-0.2544	.5577	.2663	+28	-58
ψ^3 Aquarii	5	2.82	15.0	10 18.0	16 13.3	+ 5 53.4	+0.2881	.5576	.2664	+57	-28
B. A. C. 8214	6½	2.82	16.1	8 9.8	23 28.1	-11 7.1	+0.1472	.5550	.2736	+50	-36
B. A. C. 8274	6	2.82	16.7	7 4.9	4 5 11.2	- 5 36.2	+0.6624	.5539	.2777	+82	- 9
27 Piscium	5½	2.81	17.4	4 15.4	9 40.4	- 1 16.4	-0.8566	.5527	.2804	- 2	-90
29 Piscium	5½	+2.81	+17.6	- 3 43.8	11 3.6	+ 0 3.9	-0.9838	.5525	+.2810	-10	-90
4 Ceti	6	2.82	17.8	3 15.0	13 40.7	+ 2 35.5	-0.7163	.5518	.2822	+ 6	-90
5 Ceti	6	2.82	17.9	3 8.9	13 53.1	+ 2 47.5	-0.7567	.5518	.2822	+ 4	-90
B. A. C. 5	6	2.81	17.9	2 55.4	14 6.9	+ 3 0.8	-0.9128	.5518	.2822	- 5	-90
B. A. C. 81	6½	2.82	18.4	2 55.0	21 7.6	+ 9 46.9	+1.0671	.5508	.2842	+87	+15
10 Ceti	6	2.81	18.5	0 44.9	22 4.0	+10 41.2	-0.7932	.5508	.2843	+ 2	-90
14 Ceti	6½	+2.81	+18.8	- 1 11.9	5 2 2.3	- 9 28.7	+0.7795	.5506	+.2848	+78	- 3
15 Ceti	6½	2.82	18.9	- 1 11.8	3 10.7	- 8 22.6	+1.1018	.5504	.2846	+89	+17
77 Pisc., *mult.*	6	2.81	19.5	+ 4 14.2	15 31.5	+ 3 32.5	-0.7327	.5501	.2820	+ 6	-84
e Piscium	5½	2.80	19.5	4 59.0	16 40.4	+ 4 39.0	-1.1429	.5502	.2816	-20	-85
96 Piscium	6½	2.80	19.6	6 38.6	6 1 51.1	-10 29.4	-0.2172	.5508	.2765	+32	-54
μ Piscium	5	2.80	19.7	5 29.6	2 20.7	-10 0.8	+1.0534	.5508	.2763	+90	+15
B. A. C. 481	6½	+2.80	+19.5	+ 7 0.0	4 57.2	- 7 29.7	+0.2847	.5514	+.2743	+59	-27
ο Piscium	4	2.80	19.5	8 31.4	9 4.4	- 3 31.1	-0.0970	.5518	.2708	+38	-47
54 Ceti	6	2.81	19.3	10 25.1	11 28.9	- 1 11.7	-1.3243	.5523	.2684	-39	-80
29 Arietis	6½	2.78	18.3	14 28.5	7 5 50.6	- 7 28.8	-0.6268	.5567	.2460	+11	-73
ο Arietis	6	2.78	18.1	14 46.6	9 53.1	- 3 37.2	+0.2922	.5580	.2383	+60	-23
σ Arietis	6	2.76	17.9	14 33.7	13 52.9	+ 0 16.3	+1.2153	.5587	.2333	+90	+34
ρ^3 Arietis	6	+2.78	+17.3	+17 31.2	15 56.7	+ 2 15.6	-1.2738	.5594	+.2298	-36	-73
53 Arietis	6	2.77	16.9	17 23.6	20 40.5	+ 6 49.2	-0.0810	.5608	.2213	+39	-40
54 Arietis	6½	2.78	16.7	18 18.6	21 3.0	+ 7 10.9	-0.9217	.5608	.2208	- 8	-72
13 Tauri	5½	2.74	15.3	19 17.8	8 11 25.5	- 2 58.1	+1.0512	.5652	.1914	+90	+26
B. A. C. 1143	6	2.75	15.0	20 31.7	12 18.2	- 2 7.3	-0.0325	.5653	.1900	+42	-34
32 Tauri	6	2.75	14.1	22 6.8	17 27.8	+ 2 50.8	-0.6989	.5668	.1780	+ 5	-68
A^1 Tauri	4½	+2.74	+13.8	+21 44.2	20 44.1	+ 5 59.9	+0.2574	.5675	+.1706	+59	-17
A^2 Tauri	6	2.73	13.7	21 40.1	20 59.9	+ 6 15.1	+0.3717	.5675	.1704	+66	-11
62 Tauri	6	2.71	12.2	24 0.4	9 4 42.3	-10 19.8	-0.7849	.5692	.1514	- 1	-66
υ^1 Tauri	4½	2.69	12.6	22 31.6	5 41.3	- 9 23.0	+0.8819	.5694	.1489	+90	+19
υ^2 Tauri	6	2.70	12.4	22 42.7	6 5.8	- 8 59.4	+0.7532	.5695	.1482	+90	+11
B. A. C. 1518	6	2.65	10.4	24 23.3	17 59.9	+ 2 27.8	+0.6070	.5711	.1180	+87	+ 7
k Tauri	5½	+2.65	+10.2	+24 51.3	18 45.8	+ 3 12.0	+0.2122	.5711	+.1154	+56	-14
B. A. C. 1746	6½	2.58	7.3	27 34.8	10 10 12.0	- 5 56.9	-1.1765	.5715	.0737	-35	-63
125 Tauri	6	2.52	7.5	25 49.5	11 48.5	- 4 24.0	+0.7791	.5711	.0698	+90	+29
136 Tauri	5	2.52	6.2	27 34.9	17 21.3	+ 0 56.2	-0.7276	.5706	.0542	+ 2	-62
139 Tauri	5½	2.46	6.5	25 56.2	19 19.2	+ 2 49.7	+1.1066	.5702	.0486	+90	+44
B. A. C. 2097	6½	2.36	3.9	28 17.6	11 8 40.7	- 8 18.8	-0.9922	.5669	.0113	-17	-62
49 Aurigae	5½	+2.34	+ 3.6	+28 7.2	10 42.1	- 6 21.9	-0.7905	.5662	+.0058	- 3	-62
54 Aurigae	6	2.32	3.2	28 22.4	12 31.0	- 4 37.1	-1.0566	.5657	+.0007	-23	-62
39 Geminor.	6½	2.21	3.0	26 14.8	20 41.5	+ 3 15.3	+1.1368	.5622	-.0210	+90	+49
47 Geminor.	6	2.15	2.0	27 3.8	12 2 1.5	+ 8 23.7	+0.1126	.5598	.0348	+51	-12
53 Geminor.	6	2.15	1.3	28 7.0	3 57.4	+10 15.3	-1.0929	.5590	.0398	-26	-62
59 Geminor.	6½	2.10	1.0	27 52.9	7 40.1	-10 10.0	-1.0074	.5571	.0495	-18	-62
ι Geminorum	4	+2.09	+ 0.9	+28 2.9	8 10.8	- 9 40.4	-1.2134	.5569	-.0504	-41	-62
υ Geminorum	4½	2.03	0.6	27 10.5	12 37.8	- 5 22.9	-0.5232	.5542	.0619	+14	-59
c Geminorum	6	1.96	+ 0.5	26 5.1	16 14.8	- 1 53.6	+0.4186	.5525	.0704	+71	+ 1
φ Geminorum	5	1.94	- 0.3	27 5.5	20 22.3	+ 2 5.2	-0.9860	.5497	.0807	-16	-63
ω^1 Cancri	6	1.87	0.2	25 44.3	23 43.9	+ 5 19.9	+0.2019	.5478	.0853	+56	-12
ω^2 Cancri	6½	+1.86	- 0.1	+25 26.2	13 0 4.9	+ 5 40.1	+0.4978	.5477	-.0889	+77	+ 3

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0 Δα	Red'ns from 1873.0 Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
ψ^1 Cancri	6½	+1.83	−0.9	+26 13.0	13 3 52.9	+ 9 20.3	−0.7053	.5453	−.0976	+ 3	−64
ψ^2 Cancri	6	1.83	0.8	25 53.4	4 0.0	+ 9 27.2	−0.3625	.5453	.0978	+23	−43
λ Cancri	6	1.75	0.7	24 25.2	8 36.8	−10 5.4	+0.7659	.5421	.1082	+90	+16
υ^1 Cancri, *mult.*	6½	1.72	1.2	24 56.8	11 24.9	− 7 23.0	−0.1205	.5403	.1143	+36	−31
υ^2 Cancri	6½	1.70	1.2	24 33.8	12 19.2	− 6 30.5	+0.1943	.5400	.1157	+55	−15
υ^3 Cancri	6	1.69	1.4	24 30.4	13 39.8	− 5 12.6	+0.0992	.5388	.1188	+49	−20
32 Cancri	6	+1.68	−1.5	+24 30.9	14 14.2	− 4 39.6	+0.0082	.5386	−.1199	+44	−25
ξ Cancri	5	1.44	2.5	22 33.4	14 7 37.3	−11 50.3	−0.2132	.5269	.1535	+32	−41
79 Cancri	6	1.43	2.6	22 30.6	8 6.2	−11 22.3	−0.2352	.5267	.1541	+30	−42
B. A. C. 3138	6	1.41	2.4	21 48.2	9 42.5	− 9 49.1	+0.2915	.5255	.1571	+61	−15
B. A. C. 3292	6½	1.26	3.2	20 52.2	22 14.6	+ 2 19.6	−0.7777	.5175	.1774	+ 1	−69
η Leonis	3½	1.10	3.2	17 22.8	15 12 49.5	− 7 31.6	+0.3390	.5092	.1982	+64	−18
42 Leonis	6	+1.01	−3.2	+15 36.8	20 27.2	− 0 7.2	+0.7494	.5049	−.2075	+90	+ 2
B. A. C. 3579	6	0.97	3.3	14 59.4	16 0 9.7	+ 3 28.9	+0.6642	.5034	.2111	+90	− 3
i Leonis	6	0.96	3.4	14 47.2	1 57.9	+ 5 14.0	+0.5059	.5026	.2136	+75	−12
k Leonis	6	0.90	3.9	14 51.8	9 37.3	−11 19.7	−1.2457	.4991	.2216	−32	−75
ω Virginis	6	0.66	4.3	8 50.1	17 14 24.9	− 7 19.5	−1.2720	.4905	.2433	−32	−81
ν Virginis	4½	0.63	4.1	7 14.4	18 34.9	− 3 16.2	−0.5188	.4899	.2455	+17	−73
B. A. C. 3996	6	+0.61	−3.9	+ 5 53.9	20 25.5	− 1 28.7	+0.5161	.4897	−.2464	+77	−16
b Virginis	6	0.58	4.0	4 21.7	18 2 32.2	+ 4 28.2	+0.7073	.4889	.2489	+90	− 6
10 Virginis	6	0.53	3.9	2 36.6	8 2.4	+ 9 49.6	+1.2732	.4887	.2507	+90	+32
B. A. C. 4104	6½	0.55	4.3	+ 4 45.6	9 10.0	+10 55.4	−1.3922	.4887	.2511	−47	−86
γ Virg., *mult.*	2½	0.46	4.4	− 0 45.2	19 2 10.1	+ 3 28.2	+0.4142	.4894	.2537	+67	−22
B. A. C. 4277	6	0.45	4.4	0 52.7	3 14.0	+ 4 30.4	+0.2821	.4895	.2538	+59	−29
α^1 Libræ	6	+0.40	−6.6	−15 28.2	21 23 34.2	− 1 4.8	−0.2636	.5177	−.2172	+24	−59
α^2 Libræ	2½	0.40	6.6	15 30.9	23 39.0	− 1 0.2	−0.2322	.5177	.2171	+26	−57
28 Libræ	6	0.46	7.1	17 41.9	22 14 26.8	−10 39.8	−0.9388	.5277	.1978	−16	−90
B. A. C. 5109	6	0.50	7.4	19 14.3	20 2.9	− 5 14.3	−0.3584	.5316	.1895	+15	−65
41 Libræ	6	0.52	7.4	18 53.0	23 2.5	− 2 20.5	−1.2999	.5338	.1846	−50	−90
κ Libræ	5	0.53	7.5	19 16.0	23 0 28.4	− 0 57.4	−1.1487	.5351	.1822	−33	−90
B. A. C. 5281	6	+0.59	−7.7	−20 36.7	7 55.4	+ 6 14.8	−1.0081	.5403	−.1692	−24	−90
δ Scorpii	2½	0.60	8.1	22 15.6	8 58.0	+ 7 15.3	+0.5873	.5410	.1674	+63	−11
B. A. C. 5335	6½	0.62	8.3	23 15.9	11 35.3	+ 9 47.4	+1.2334	.5431	.1623	+67	+37
B. A. C. 5354	6½	0.63	8.3	23 21.3	12 47.1	+10 56.8	+1.1358	.5439	.1691	+67	+26
19 Scorpii	6	0.67	8.3	23 51.8	18 9.0	− 7 52.3	+0.8474	.5476	.1496	+66	+ 4
ρ Oph., *mult.*	5	0.69	8.4	23 9.2	20 22.8	− 5 43.1	−0.2393	.5497	.1446	+16	−58
22 Scorpii	5	+0.71	−8.7	−24 50.1	22 23.7	− 3 46.4	+1.2703	.5514	−.1405	+65	+45
25 Scorpii	6	0.79	8.7	25 18.0	24 5 42.0	+ 3 16.5	+0.7943	.5559	.1244	+65	+ 2
18 Ophiuchi	6	0.81	8.4	24 25.0	6 58.5	+ 4 30.4	−0.3042	.5568	.1217	+10	−62
B. A. C. 5641	6½	0.82	8.5	24 36.9	7 40.3	+ 5 10.7	−0.1770	.5572	.1200	+16	−54
B. A. C. 5709	6	0.86	8.4	24 54.0	11 22.6	+ 8 44.9	−0.3007	.5598	.1110	+ 9	−62
26 Ophiuchi	6	0.86	8.4	24 47.7	11 27.5	+ 8 49.7	−0.4223	.5598	.1100	+ 3	−71
B. A. C. 5800	6½	+0.94	−8.8	−26 49.9	17 24.8	− 9 26.0	+1.1223	.5639	−.0957	+63	+28
A^1 Ophiuchi	5	0.95	8.6	26 25.0	17 55.7	− 8 56.3	+0.6311	.5639	.0954	+59	− 8
A^2 Ophiuchi	6	0.93	8.6	26 24.9	17 55.8	− 8 56.2	+0.6299	.5639	.0954	+59	− 8
38 Ophiuchi	6½	0.96	8.6	26 29.3	18 52.3	− 8 1.7	+0.6187	.5643	.0930	+59	− 8
θ Ophiuchi	3½	0.97	8.2	24 52.3	20 44.7	− 6 13.4	−1.2644	.5655	.0882	−58	−90
B. A. C. 5909	6½	1.04	8.3	26 10.3	25 0 47.3	− 2 19.8	−0.2222	.5675	.0778	+10	−57
3 Sagiittarii	5	+1.14	−8.5	−27 46.9	7 18.5	+ 3 56.8	+1.0273	.5709	−.0608	+63	+20
B. A. C. 6024	6½	1.14	8.1	27 1.2	8 28.8	+ 5 4.4	+0.1532	.5715	.0572	+27	−35
B. A. C. 6063	6½	1.09	8.3	28 2.8	11 3.7	+ 7 33.5	+1.0957	.5728	.0504	+62	+26
B. A. C. 6120	6½	1.25	8.1	28 22.3	15 10.1	+11 30.4	+1.2540	.5754	.0390	+62	+49
B. A. C. 6191	6½	1.32	7.9	28 19.6	19 28.6	− 8 21.0	+1.0637	.5769	.0265	+62	+23
B. A. C. 6194	6	+1.31	−7.5	−27 5.3	19 46.9	− 8 3.3	−0.2455	.5769	−.0258	+ 4	−59

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6220	6½	+1.31	- 7.7	-28 29.4	25 21 20.6	- 6 33.3	+1.1890	.5765	-.0218	+62	+38
φ Sagittarii	3½	1.49	6.5	27 7.2	26 6 54.0	+ 2 38.0	-0.3208	.5789	+.0061	- 2	-64
σ Sagittarii	2½	1.54	5.9	26 27.2	10 46.2	+ 6 21.1	-0.9710	.5796	.0174	-37	-90
τ Sagittarii	3½	1.63	6.0	27 51.3	15 24.6	+10 48.7	+0.6028	.5800	.0313	+53	- 9
B. A. C. 6562	6½	1.65	5.2	26 7.2	17 57.5	-10 44.4	-1.1146	.5802	.0383	-46	-90
B. A. C. 6628	6	1.74	5.3	28 6.0	22 25.2	- 6 27.1	+1.1532	.5801	.0517	+62	+32
B. A. C. 6666	6	+1.76	- 4.8	-27 14.7	27 0 34.9	- 4 22.5	+0.3728	.5800	+.0578	+40	-22
ω Sagittarii	5	1.93	3.4	26 38.1	9 59.0	+ 4 37.1	+0.4945	.5789	.0873	+50	-16
A Sagittarii	5	1.92	3.3	26 32.3	12 14.8	+ 6 50.1	+0.5066	.5786	.0907	+50	-15
B. A. C. 7077	6	2.09	1.0	25 22.3	28 1 59.0	- 3 57.5	+0.8106	.5748	.1282	+65	+ 3
B. A. C. 7108	6½	2.13	- 0.7	25 32.8	4 0.3	- 2 0.9	+1.2543	.5744	.1335	+65	+43
B. A. C. 7197	6	2.15	+ 0.7	23 11.9	8 21.0	+ 2 9.8	-0.5454	.5727	.1443	0	-81
B. A. C. 7237	6	+2.19	+ 0.5	-24 15.4	10 14.5	+ 3 59.0	+0.8151	.5729	+1.492	+66	+ 3
χ Capricorni	6	2.24	2.4	21 42.1	16 42.6	+10 12.5	-0.7746	.5694	1.653	-11	-90
φ Capricorni	5½	2.27	3.0	21 10.6	19 39.6	-10 57.2	-0.8113	.5682	.1722	-12	-90
33 Capricorni	5½	2.31	3.4	21 23.3	23 13.3	- 7 31.5	+0.0332	.5666	.1799	+33	-42
35 Capricorni	6	2.33	3.4	21 44.6	29 0 30.9	- 6 16.8	+0.6275	.5661	.1833	+65	- 9
37 Capricorni	6	2.35	4.3	20 38.9	3 44.0	- 3 10.8	+0.1163	.5647	.1901	+38	-37
ε Capricorni	4½	+2.36	+ 4.8	-20 1.9	4 40.7	- 2 16.2	-0.3277	.5643	+.1922	+16	-63
κ Capricorni	5	2.37	5.0	19 26.5	7 2.5	+ 0 0.4	-0.4656	.5636	.1970	+ 9	-73
B. A. C. 7550	6	2.38	4.9	20 12.0	7 16.4	+ 0 13.7	+0.3472	.5636	.1973	+52	-25
29 Aqua., *mult.*	6	2.44	6.8	17 34.4	15 31.5	+ 8 10.9	-0.6105	.5595	.2139	+ 4	-85
56 Aquarii	6	2.52	9.4	15 13.9	30 3 38.4	- 4 8.1	-0.2488	.5542	.2346	+25	-58
τ^1 Aqua., *mult.*	6	2.58	10.5	14 43.3	11 19.3	+ 3 16.5	+1.0688	.5514	.2457	+76	+17
τ^2 Aquarii	4	+2.58	+10.7	-14 15.5	12 9.6	+ 4 5.0	+0.8274	.5511	+.2469	+76	+ 1
74 Aquarii	6	2.57	11.5	12 17.3	13 53.9	+ 5 45.7	-0.7151	.5504	.2493	+ 2	-90
ψ^1 Aquarii	4½	2.64	13.4	9 46.5	23 54.5	- 8 34.6	-0.6683	.5474	.2613	+ 6	-89
ψ^2 Aquarii	4½	2.66	13.5	9 52.3	31 0 50.2	- 7 40.7	-0.3285	.5473	.2622	+24	-62
ψ^3 Aquarii	5	2.66	13.4	10 18.1	1 18.5	- 7 13.4	+0.2230	.5470	.2626	+53	-32
B A. C. 8214	6	2.70	14.7	8 9.8	8 48.2	+ 0 0.9	+0.0864	.5453	.2696	+56	-39
B. A. C. 8274	6	+2.74	+15.5	- 7 4.9	14 42.7	+ 5 43.4	+0.6146	.5443	+.2740	+79	-12
27 Piscium	5½	2.73	16.5	4 15.4	19 20.4	+10 11.7	-0.9224	.5438	.2767	- 6	-90
29 Piscium	5½	2.74	16.7	3 43.8	20 46.2	+11 34.5	-1.0488	.5436	.2775	-14	-90
4 Ceti	6	2.76	17.0	3 15.0	23 28.0	- 9 49.1	-0.7748	.5434	.2787	+ 3	-90
5 Ceti	6	2.76	17.0	3 9.0	23 40.8	- 9 36.7	-0.8158	.5434	.2788	0	-90
B. A. C. 5	6	+2.75	+17.2	- 2 55.5	23 55.0	- 9 23.1	-0.9739	.5434	+.2789	- 9	-90
NOVEMBER.											
B. A. C. 81	6½	+2.81	+17.6	- 2 55.0	1 7 7.7	- 1 24.9	+1.0394	.5430	+.2811	+87	+13
10 Ceti	6	2.80	18.0	0 44.9	8 5.6	- 1 29.0	-0.8429	.5429	.2813	- 1	-90
14 Ceti	6½	2.83	18.3	1 11.9	12 10.1	+ 2 27.2	+0.7525	.5431	.2819	+83	- 4
15 Ceti	6½	2.84	18.4	- 1 11.8	13 20.1	+ 3 34.9	+1.0802	.5431	.2820	+89	+16
77 Pisc., *mult.*	6	2.89	19.7	+ 4 14.2	1 57.4	- 8 13.4	-0.7608	.5446	.2804	+ 4	-80
ε Piscium	5½	2.89	19.8	4 59.0	3 7.6	- 7 5.6	-1.1733	.5447	.2800	-23	-85
96 Piscium	6½	+2.95	+20.1	+ 6 38.6	2 12 27.6	+ 1 55.3	-0.2296	.5469	+.2754	+31	-55
μ Piscium	5	2.96	20.1	5 29.6	12 57.6	+ 2 24.3	+1.0505	.5470	.2751	+90	+15
B. A. C. 481	6½	2.97	20.2	7 0.0	15 36.2	+ 4 57.4	+0.2785	.5478	.2733	+59	-28
ο Piscium	4	3.01	20.3	8 31.4	3 19 46.4	+ 8 59.1	-0.1014	.5489	.2702	+38	-47
54 Ceti	6	3.04	20.4	10 25.1	21 12.4	+10 20.0	-1.3320	.5495	.2682	-40	-80
29 Arietis	6½	+3.14	+19.9	+14 22.6	16 39.9	+ 5 8.8	-0.6124	.5568	+.2468	+11	-74
ο Arietis	6	3.17	19.5	14 46.7	21 42.4	+10 0.5	+0.3116	.5590	.2394	+62	-22
π Arietis	5½	3.20	19.2	16 56.4	23 42.9	+11 56.6	-1.3766	.5598	.2362	-56	-73
σ Arietis	6	3.18	19.4	14 33.7	4 0 41.7	-11 6.6	+1.2368	.5603	.2346	+90	+36
ρ^3 Arietis	6	+3.21	+19.0	+17 31.2	2 45.1	- 9 7.7	-1.2500	.5612	+.2313	-34	-73

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
53 Arietis	6	+3.22	+18.6	+17 23.6	4 7 27.4	- 4 35.6	-0.0542	.5632	+.2228	+40	-38
54 Arietis	6½	3.24	18.5	18 18.7	7 49.8	- 4 14.1	-0.8935	.5634	.2223	- 6	-72
13 Tauri	5½	3.28	16.9	19 17.8	22 4.2	+ 9 28.8	+1.0829	.5694	.1939	+90	+28
B. A. C. 1143	6	3.31	16.7	20 31.7	22 56.3	+10 19.0	+0.0045	.5699	.1920	+44	-32
32 Tauri	6	3.34	15.9	22 6.9	5 4 1.8	- 8 47.0	-0.6555	.5719	.1805	+ 7	-67
A^1 Tauri	4½	3.33	15.4	21 44.2	7 15.1	- 5 41.0	+0.2965	.5729	.1731	+61	-15
A^2 Tauri	6	+3.33	+15.4	+21 40.1	7 30.6	- 5 26.1	+0.4109	.5732	+.1720	+69	- 9
62 Tauri	6	3.37	14.0	24 0.4	15 5.2	+ 1 51.2	-0.7369	.5754	.1537	+ 2	-66
υ^1 Tauri	4½	3.34	14.1	22 31.6	16 3.0	+ 2 46.8	+0.9211	.5754	.1513	+90	+21
υ^2 Tauri	6	3.35	14.0	22 42.7	16 27.1	+ 3 10.0	+0.7934	.5761	.1497	+90	+14
B. A. C. 1518	6	3.38	11.4	24 23.3	6 4 6.8	- 9 37.2	+0.6521	.5785	.1194	+90	+ 9
k Tauri	5½	3.38	11.2	24 51.3	4 51.6	- 8 54.1	+0.2610	.5788	.1172	+59	-11
B. A. C. 1746	6½	+3.41	+ 7.9	+27 34.8	19 56.4	+ 5 35.6	-1.1092	.5794	+.0748	-27	-63
125 Tauri	6	3.35	8.1	25 49.5	21 30.5	+ 7 6.0	+0.8268	.5793	.0700	+90	+23
136 Tauri	5	3.37	6.6	27 34.9	7 2 55.0	-11 42.1	-0.6630	.5788	.0547	+ 5	-59
139 Tauri	5½	3.31	6.7	25 56.2	4 50.0	- 9 51.6	+1.1527	.5788	.0491	+90	+48
B. A. C 2097	6½	3.28	3.6	28 17.6	17 51.0	+ 2 39.4	-0.9219	.5753	.0117	-12	-62
49 Aurigae	5½	3.26	3.1	28 7.2	19 49.4	+ 4 33.3	-0.7223	.5747	.0065	+ 2	-62
54 Aurigae	6	+3.24	+ 2.7	+28 22.4	21 35.6	+ 6 15.4	-0.9845	.5737	+.0008	-17	-62
39 Geminor.	6½	3.12	1.7	26 14.8	8 5 33.7	-10 4.5	+1.1858	.5703	-.0236	+90	+53
47 Geminor.	6	3.10	+ 0.5	27 3.8	10 45.8	- 5 4.2	+0.1726	.5675	.0355	+54	- 8
53 Geminor.	6	3.10	- 0.2	28 6.9	12 38.9	- 3 15.3	-1.0198	.5664	.0407	-20	-62
59 Geminor.	6½	3.06	0.8	27 52.8	16 16.3	+ 0 14.1	-0.9373	.5646	.0492	-13	-62
ι Geminorum	4	3.06	0.9	28 2.9	16 46.2	+ 0 42.9	-1.1392	.5640	.0514	-31	-62
υ Geminorum	4½	+2.98	- 1.5	+27 10.5	21 7.0	+ 4 54.2	-0.4561	.5614	-.0624	+18	-46
c Geminorum	6	2.91	1.8	26 5.0	9 0 39.1	+ 8 18.6	+0.4763	.5590	.0715	+76	+ 4
φ Geminorum	5	2.89	2.8	27 5.5	4 41.1	-11 48.2	-0.9145	.5563	.0815	-11	-63
ω^1 Cancri	6	2.82	3.0	25 44.3	7 57.4	- 8 38.8	+0.2618	.5541	.0892	+69	- 9
ω^2 Cancri	6½	2.81	2.9	25 26.1	8 19.0	- 8 18.0	+0.5547	.5539	.0899	+83	+ 6
ψ^1 Cancri	6½	2.78	3.9	26 12.9	12 2.3	- 4 42.6	-0.6374	.5512	.0987	+ 8	-69
ψ^2 Cancri	6	+2.78	- 3.8	+25 53.4	12 9.2	- 4 35.9	-0.2974	.5511	-.0989	+27	-39
λ Cancri	6	2.68	4.0	24 25.2	16 40.5	- 0 14.0	+0.8205	.5474	.1093	+90	+19
υ^1 Cancri, *mult.*	6½	2.66	4.6	24 56.8	19 25.4	+ 2 25.2	-0.0581	.5451	.1155	+40	-28
υ^2 Cancri	6½	2.65	4.7	24 33.8	20 18.7	+ 3 16.7	+0.2537	.5447	.1169	+59	-12
υ^3 Cancri	6	2.63	4.8	24 30.4	21 37.8	+ 4 33.2	+0.1595	.5436	.1232	+53	-17
32 Cancri	6	2.62	5.0	24 30.8	22 18.5	+ 5 12.5	+0.0692	.5434	.1213	+48	-22
ξ Cancri	5	+2.36	- 6.7	+23 33.3	10 15 18.1	- 2 21.7	-0.1526	.5303	-.1544	+36	-37
79 Cancri	6	2.35	6.8	22 30.5	15 46.6	- 1 54.2	-0.1744	.5298	.1554	+34	-30
B. A. C. 3138	6	2.32	6.8	21 48.2	17 21.8	- 0 22.0	+0.3482	.5289	.1580	+65	-12
B. A. C. 3292	6½	2.15	7.9	20 52.1	11 5 45.0	+11 37.8	-0.7165	.5194	.1785	+ 4	-69
η Leonis	3½	1.92	8.3	17 22.7	20 12.6	+ 1 39.1	+0.3905	.5100	.1986	+67	-16
42 Leonis	6	1.81	8.4	15 36.7	12 3 47.7	+ 9 0.9	+0.7974	.5057	.2074	+90	+ 5
B. A. C. 3579	6	+1.76	- 8.5	+14 59.3	7 20.1	-11 24.1	+0.7112	.5030	-.2120	+90	- 1
i Leonis	6	1.74	8.6	14 47.1	9 17.1	- 9 39.2	+0.5534	.5025	.2138	+79	- 9
k Leonis	6	1.66	9.2	14 51.7	16 55.2	- 2 14.2	-1.1940	.4984	.2216	-27	-75
ω Virginis	6	1.33	9.1	8 59.0	13 21 42.5	+ 1 45.7	-1.2329	.4888	.2429	-28	-81
ν Virginis	4½	1.28	8.9	7 14.3	14 1 52.9	+ 5 49.2	-0.4816	.4882	.2449	+19	-70
B. A. C. 3906	6	1.26	8.6	5 53.8	3 43.7	+ 7 37.2	+0.5597	.4878	.2458	+78	-14
b Virginis	6	+1.20	- 8.5	+ 4 21.6	9 51.1	-10 25.3	+0.7394	.4871	-.2483	+90	- 5
10 Virginis	6	1.13	8.3	2 36.5	15 22.0	- 5 3.2	+1.3026	.4869	.2501	+90	+35
B. A. C. 4104	6½	1.15	8.9	+ 4 45.5	16 29.8	- 3 57.2	-1.3586	.4867	.2505	-41	-85
γ Virginis	2½	1.09	8.2	- 0 45.3	15 9 31.6	-11 22.6	+0.4387	.4889	.2533	+69	-21
B. A. C. 4277	6	0.99	8.1	0 52.8	10 35.5	-10 20.4	+0.3065	.4881	.2533	+61	-28
38 Virginis	6	+0.93	- 7.9	- 2 51.9	15 59.4	- 5 5.2	+1.1262	.4892	-.2533	+87	+19

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
k Virginis	6	+0.92	-8.0	- 3 7.7	15 19 36.4	- 1 34.1	+0.5005	.4901	-.2531	+73	-18
46 Virginis	6	0.92	8.1	2 41.2	20 8.1	- 1 3.3	-0.1192	.4902	.2530	+37	-50
48 Virginis	6	0.91	8.1	2 58.9	21 59.2	+ 0 44.8	-0.2633	.4907	.2528	+30	-58
θ Virg., *mult.*	4½	0.89	7.8	4 51.8	16 1 20.7	+ 4 0.9	+0.9574	.4916	.2524	+85	+ 8
l^2 Virginis	5	0.81	8.1	5 36.1	13 30.8	- 8 9.0	-1.2826	.4961	.2489	-34	-90
m Virginis	6	0.78	7.8	8 3.8	18 44.7	- 3 3.9	+0.1175	.4983	.2467	+48	-37
B. A. C. 4591	6	+0.77	-7.6	- 9 4.4	21 45.7	- 0 7 9	+0.4805	.4998	-.2452	+69	-19
Venus				10 55.0	17 10 12.5	+11 57.6	-0.5171	.4541	.2182	+14	-76
λ Virginis	4½	0.70	7.6	12 47.2	14 37.2	- 7 45.4	+0.4787	.5092	.2341	+66	-19
5 Libræ	6	0.67	7.7	14 55.5	18 4 18.9	+ 5 31.9	-0.3234	.5183	.2212	+21	-63
c^1 Libræ	6	0.67	7.7	15 28.2	6 49.5	+ 7 49.1	-0.2529	.5202	.2183	+24	-58
α^2 Libræ	2½	0.67	7.7	15 30.9	6 46.2	+ 7 54.6	-0.2253	.5204	.2183	+24	-56
13 Ophiuchi	6	+0.78	-7.8	-24 24.9	20 13 17.9	-11 22.8	-0.2936	.5623	-.1231	+20	-62
B. A. C. 5641	6½	0.79	7.8	24 36.9	13 59.0	-10 43.2	-0.1653	.5630	.1212	+17	-54
B. A. C. 5709	6	0 81	7.7	24 54.1	17 37.6	- 7 12.5	-0.2876	.5657	.1122	+10	-61
26 Ophiuchi	6	0.81	7.7	24 47.8	17 42.5	- 7 7.8	-0.4076	.5657	.1121	+ 4	-69
B. A. C. 5800	6½	0.87	7.9	26 49.9	23 33.9	- 1 29.4	+1.1262	.5696	.0974	+63	+28
A^1 Ophiuchi	5½	0.86	7.8	26 25.0	21 0 4.2	- 1 0.4	+0.6381	.5696	.0964	+60	- 7
A^2 Ophiuchi	6	+0 86	-7.8	-26 24.9	0 4.3	- 1 0.3	+0.6368	.5696	-.0964	+60	- 7
38 Ophiuchi	6½	0.87	7.7	26 29.3	0 59.9	- 0 6.7	+0.6258	.5702	.0939	+59	- 8
θ Ophiuchi	3½	0.88	7.4	24 52.3	2 50.5	+ 1 39.8	-1.2454	.5712	.0892	-55	-90
B. A. C. 5909	6½	0.92	7.5	26 10.3	6 49.1	+ 5 29.4	-0.2092	.5737	.0785	+11	-56
3 Sagittarii	5	0.99	7.5	27 46.9	13 14.1	+11 39.7	+1.0342	.5766	.0613	+63	+20
B. A. C. 6024	6½	0.99	7.3	27 1.2	14 23.4	-11 13.6	+0.1653	.5776	.0574	+28	-34
B. A. C. 6063	6½	+1.02	-7.4	-28 2.7	16 55.9	-10 47.0	+1.1031	.5785	-.0507	+62	+27
B. A. C. 6120	6½	1.07	7.3	28 22.3	20 58.7	- 4 53.5	+1.2615	.5800	.0391	+62	+52
B. A. C. 6191	6½	1.11	6.9	28 19.6	22 1 13.5	- 0 48.7	+1.0735	.5814	.0271	+62	+24
B. A. C. 6194	6	1.10	6.6	27 5.3	1 31.5	- 0 31.3	-0.2298	.5817	.0257	+ 5	-58
B. A. C. 6220	6½	1.13	6.9	28 29.4	3 3.9	+ 0 57.4	+1.1987	.5820	-.0216	+62	+39
φ Sagittarii	3½	1.22	5.9	27 7.2	12 30.1	+10 1.5	-0.3029	.5837	+.0073	- 1	-62
σ Sagittarii	2½	+1.25	-5.6	-26 27.2	16 19.7	-10 17 9	-0.9506	.5841	+.0173	-36	-90
τ Sagittarii	3½	1.33	5.6	27 51.3	20 55.3	- 5 53.3	+0.6194	.5840	.0313	+54	- 8
B. A. C. 6562	6½	1.34	4.9	26 7.2	23 27.0	- 3 27.5	-1.0935	.5840	.0392	-44	-90
B. A. C. 6628	6	1.41	5.0	28 6.6	23 3 52.4	+ 0 47.4	+1.1711	.5833	.0518	+62	+35
B. A. C. 6666	6	1.42	4.6	27 14.7	6 1.2	+ 2 51.1	+0.3925	.5830	.0580	+41	-21
ω Sagittarii	5	1.54	3.6	26 38.1	16 22.3	-11 12.1	+0.5172	.5808	0883	+51	-14
A Sagittarii	5	+1.55	-3.4	-26 32.3	17 37.9	- 9 59.4	+0.5298	.5805	+.0916	+52	-14
B. A. C. 7077	6	1.73	1.5	25 22.3	24 7 22.0	+ 3 12.8	+0.8387	.5748	.1289	+65	+ 5
B. A. C. 7108	6½	1.75	1.5	25 22.8	9 23.7	+ 5 9.8	+1.2844	.5739	.1340	+65	+49
B. A. C. 7197	6	1.77	0.2	23 11.9	13 45.5	+ 9 21.7	-0.5202	.5717	.1447	+ 1	-78
B. A. C. 7237	6	1.81	-0.3	24 15.4	15 39.6	+11 11.5	+0.8457	.5708	.1495	+66	+ 5
χ Capricorni	6	1.86	+1.2	21 42.1	22 10.5	- 6 32.3	-0.7494	.5674	.1616	- 9	-90
ο Capricorni	5½	+1.89	+1.7	-21 10.6	25 1 9.1	- 3 40.3	-0.7863	.5660	+.1714	-11	-90
33 Capricorni	5½	1.94	2.2	21 23.4	4 45.1	- 0 12.2	+0.6635	.5639	.1795	+34	-40
35 Capricorni	6	1.96	2.1	21 44.6	6 3.6	+ 1 3.3	+0.6619	.5633	.1821	+68	- 7
37 Capricorni	6	1.98	2.9	20 38.9	9 19.1	+ 4 11.7	+0.1478	.5616	.1888	+40	-35
ε Capricorni	4½	1.99	3.2	20 2.0	10 16.6	+ 5 7.1	-0.2987	.5611	.1909	+17	-61
κ Capricorni	5	2.01	3.6	19 26.6	12 40.4	+ 7 25.7	-0.4373	.5596	.1956	+11	-71
B. A. C. 7550	6	+2.01	+3.4	-20 12.0	12 54.5	+ 7 39.3	+0.3814	.5592	+.1962	+54	-23
29 Aqua., *mult.*	6	2.08	5.3	17 34.4	21 17.7	- 8 15.5	-0.5829	.5518	.2118	+ 5	-82
56 Aquarii	6	2.19	7.4	15 13.9	26 9 39.4	+ 3 40.2	-0.2168	.5480	.2321	+26	-55
τ^1 Aqua., *mult.*	6	2.27	8.3	14 43.4	17 31.4	+11 16.1	+1.1342	.5440	.2429	+76	+22
τ^2 Aquarii	4	2.28	8.6	14 15.5	18 23.0	-11 54.1	+0.8728	.5438	.2449	+76	+ 4
74 Aquarii	6	+2.27	+9.4	-12 17.3	20 9.9	-10 10.8	-0.6883	.5433	+.2460	4	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
NOVEMBER.											
		s	″	° ′	d h m	h m				°	°
ψ^1 Aquarii	4½	+2.35	+11.2	− 9 46.6	27 6 27.2	− 0 14.3	−0.6409	.5393	+.2574	+ 8	−86
ψ^2 Aquarii	4½	2.36	11.3	9 52.4	7 24.5	+ 0 41.1	−0.2972	.5388	.2583	+26	−69
ψ^3 Aquarii	5	2.37	11.2	10 18.1	7 53.6	+ 1 9.2	+0.2619	.5386	.2586	+55	−30
B. A. C. 8214	6½	2.43	12.6	8 9.8	15 37.0	+ 8 37.4	+0.1235	.5364	.2652	+48	−37
B. A. C. 8274	6	2.48	13.5	7 4.9	21 42.6	− 9 29.1	+0.6593	.5352	.2693	+82	− 9
27 Piscium	5½	2.51	14.8	4 15.4	28 2 29.4	− 4 51.8	−0.9003	.5342	.2719	− 5	−90
29 Piscium	5½	+2.53	+15.0	− 3 43.8	3 58.0	− 3 26.0	−1.0294	.5341	+.2725	−13	−90
4 Ceti	6	2.56	15.4	3 15.0	6 45.2	− 0 44.3	−0.7521	.5338	.2737	− 4	−90
5 Ceti	6	2.56	15.4	3 9.0	6 58.4	− 0 31.6	−0.7936	.5338	.2738	+ 2	−90
B. A. C. 5	6	2.25	15.6	2 55.5	7 13.0	− 0 17.4	−0.9541	.5338	.2739	− 8	−90
B. A. C. 81	6½	2.64	16.0	2 55.0	14 40.2	+ 6 55.3	+1.0887	.5333	.2769	+87	+16
10 Ceti	6	2.63	16.6	0 44.9	15 40.1	+ 7 53.2	−0.8228	.5333	.2762	0	−90
14 Ceti	6½	+2.68	+16.9	− 1 12.0	19 52.9	+11 57.7	+0.7965	.5335	+.2766	+74	− 2
15 Ceti	6½	2.68	16.9	− 1 11.9	21 5.3	−10 52.2	+1.1290	.5336	.2767	+89	+19
77 Pisc., *mult.*	6	2.79	18.8	+ 4 14.2	29 10 8.0	+ 1 45.0	−0.7437	.5352	.2750	+ 5	−83
e Piscium	5½	2.80	19.0	4 58.9	11 20.6	+ 2 55.2	−1.1625	.5352	.2748	−22	−85
96 Piscium	6½	2.91	19.5	6 38.6	20 58.7	−11 45.7	−0.2078	.5379	.2705	+33	−54
μ Piscium	5	2.92	19.2	5 29.6	21 29.6	−11 15.8	+1.0907	.5379	.2702	+90	+18
B. A. C. 481	6½	+2.95	+19.5	+ 7 0.0	30 0 13.3	− 8 37.6	+0.3066	.5389	+.2687	+61	−26
o Piscium	4	2.99	19.8	8 31.4	4 31.1	− 4 28.3	−0.0804	.5407	.2651	+39	−46
54 Ceti	6	+3.02	+20.2	+10 25.1	7 1.5	− 2 3.0	−1.3295	.5412	+.2637	−40	−80
DECEMBER.											
29 Arietis	6½	+3.24	+20.1	+14 28.6	1 1 59.0	− 7 44.2	−0.6073	.5499	+.2434	+11	−73
o Arietis	6	3.30	19.7	14 46.7	7 8.4	− 2 45.6	+0.3244	.5525	.2363	+62	−21
σ Arietis	6	3.33	19.5	14 33.8	10 11.7	+ 0 11.3	+1.2572	.5542	.2318	+90	+38
ρ^3 Arietis	6	3.38	19.8	17 31.3	12 17.7	+ 2 12.9	−1.2560	.5553	.2285	−34	−73
53 Arietis	6	3.42	19.2	17 23.6	17 5.6	+ 6 50.5	−0.0508	.5580	.2206	+41	−38
54 Arietis	6½	3.44	19.3	18 18.7	17 28.4	+ 7 12.5	−0.8983	.5583	.2196	− 6	−72
13 Tauri	5½	+3.60	+17.7	+19 17.8	2 7 56.3	− 2 51.1	+1.0857	.5662	+.1921	+90	+28
B. A. C. 1143	6	3.62	17.7	20 31.7	8 49.0	− 2 0.2	−0.0011	.5668	.1903	+43	−32
32 Tauri	6	3.69	17.0	22 6.9	13 58.0	+ 2 57.3	−0.6680	.5692	.1790	+ 7	−67
A¹ Tauri	4½	3.71	16.5	21 44.2	17 13.2	+ 6 5.2	+0.2874	.5709	.1719	+61	−16
A² Tauri	6	3.77	16.4	21 40.1	17 28.9	+ 6 20.3	+0.4022	.5712	.1704	+69	−10
62 Tauri	6	3.82	15.2	24 0.5	3 1 6.8	−10 19.1	−0.7560	.5748	.1528	+ 1	−66
υ^1 Tauri	4½	+3.80	+14.9	+22 31.6	2 4.9	− 9 23.2	+0.9084	.5752	+.1504	+90	+21
υ^2 Tauri	6	3.80	14.9	22 42.7	2 29.2	− 8 59.8	+0.7796	.5753	.1492	+90	+13
B. A. C. 1518	6	3.91	12.6	24 23.3	14 10.9	+ 2 15.0	+0.6288	.5793	.1189	+90	+ 8
k Tauri	5½	3.92	12.5	24 51.3	14 55.9	+ 2 58.2	+0.2364	.5798	.1161	+58	−13
118 Tauri	6	3.98	9.8	25 2.9	4 3 23.0	− 9 3.6	+1.2806	.5821	.0815	+90	+62
B. A. C. 1746	6½	4.05	9.0	27 34.8	5 58.6	− 6 34.1	−1.1439	.5822	.0745	−31	−63
125 Tauri	6	+4.00	+ 8.7	+25 49.6	7 32.2	− 5 4.1	+0.7899	.5824	+.0697	+90	+21
136 Tauri	5	4.06	7.5	27 34.9	12 54.6	+ 0 5.7	−0.7021	.5825	.0544	+ 3	−61
139 Tauri	5½	4.01	7.1	25 56.3	14 48.7	+ 1 55.3	+1.1092	.5824	.0487	+90	+45
B. A. C. 2097	6½	4.06	3.6	28 17.6	5 3 42.4	− 9 41.1	−0.9689	.5800	.0110	−16	−62
49 Aurigae	5½	4.04	3.1	28 7.2	5 39.4	− 7 48.7	−0.7709	.5793	.0051	− 2	−62
54 Aurigae	6	4.05	2.7	28 22.4	7 24.3	− 6 7.8	−1.0335	.5788	+.0004	−21	−62
39 Geminor.	6½	+3.95	+ 0.9	+26 11.8	15 16.3	+ 1 26.0	+1.1223	.5758	−.0218	+90	+48
47 Geminor.	6	3.95	− 0.5	27 3.8	20 24.1	+ 6 22.1	+0.1099	.5731	.0368	+59	−12
53 Geminor.	6	3.96	1.1	28 6.9	22 15.5	+ 8 9.3	−1.0777	.5724	.0413	−25	−62
59 Geminor.	6½	3.93	1.9	27 52.8	6 1 49.7	+11 35.5	−0.9956	.5703	.0512	−17	−62
ι Geminorum	4	3.93	2.1	28 2.8	2 19.2	−11 56.1	−1.1992	.5702	.0522	−39	−62
υ Geminorum	4½	3.87	2.9	27 10.5	6 35.9	− 7 49.0	−0.5222	.5672	.0641	+14	−59
c Geminorum	6	+3.81	− 3.5	+25 5.9	11 4.6	− 4 27.9	+0.4925	.5551	−.0727	+70	0

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. Δα	Red'ns from 1873.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x′*	*y′*	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
φ Geminorum	5	+3.81	− 4.6	+27 5.5	6 14 2.8	− 0 38.5	−0.9829	.5623	−.0828	−16	−63
ω¹ Cancri	5	3.74	5.1	25 44.2	17 15.9	+ 2 27.7	+0.1842	.5601	.0906	+55	−14
ω² Cancri	6½	3.73	5.1	25 26.1	17 37.1	+ 2 48.2	+0.4752	.5598	.0918	+75	+ 2
ψ¹ Cancri	6½	3.71	6.2	26 12.9	21 16.8	+ 6 19.9	−0.7123	.5572	.1002	+ 3	−64
ψ² Cancri	6	3.70	6.1	25 53.3	21 23.6	+ 6 26.4	−0.3743	.5568	.1011	+23	−44
λ Cancri	6	+3.61	− 6.7	+24 25.1	7 1 50.4	+10 43.7	+0.7337	.5535	−.1111	+90	+14
υ¹ Cancri, *mult.*	7	3.59	7.4	24 56.7	4 32.6	−10 39.7	−0.1412	.5512	.1172	+35	−41
υ² Cancri	6½	3.58	7.5	24 33.7	5 25.1	− 9 49.0	+0.1680	.5504	.1193	+53	−17
υ³ Cancri	6	3.56	7.8	24 30.3	6 42.9	− 8 34.0	+0.0735	.5495	.1220	+48	−22
32 Cancri	6	3.55	7.9	24 30.8	7 22.9	− 7 55.2	−0.0166	.5488	.1236	+43	−27
ξ Cancri	5	+3.32	−10.6	+22 33.3	8 0 6.4	+ 8 14.3	−0.2475	.5353	−.1564	+30	−43
79 Cancri	6	3.31	10.6	22 30.4	0 34.5	+ 8 41.5	−0.2696	.5348	.1575	+29	−44
B. A. C. 3138	6	3.27	10.6	21 48.1	2 8.1	+10 12.1	+0.2490	.5338	.1601	+58	−18
B. A. C. 3292	6½	3.12	12.3	20 52.0	14 21.0	− 1 58.4	−0.8164	.5241	.1801	− 2	−69
η Leonis	3½	2.86	13.2	17 22.6	9 4 38.4	+11 52.7	+0.2775	.5130	.2003	+69	−21
42 Leonis	6	+2.75	−13.6	+15 36.7	12 9.0	− 4 50.1	+0.6798	.5080	−.2091	+90	− 2
B. A. C. 3579	6	2.70	13.8	14 59.3	15 48.6	− 1 16.9	+0.5931	.5049	.2133	+82	− 7
i Leonis	6	2.67	14.0	14 47.1	17 35.6	+ 0 27.0	+0.4351	.5042	.2152	+70	−16
k Leonis	6	2.59	14.7	14 51.6	10 1 10.6	+ 7 49.0	−1.3086	.5002	.2224	−39	−75
ω Virginis	6	2.22	15.0	8 49.9	11 5 52.6	+11 43.6	−1.3533	.4884	.24[illegible]	−42	−81
ν Virginis	4½	+2.16	−14.8	+ 7 14.2	10 3.1	− 8 12.7	−0.6042	.4872	−.2444	+12	−79
B. A. C. 3996	6	2.13	14.4	5 53.7	11 54.0	− 6 24.7	+0.4269	.4869	.2452	+69	−21
b Virginis	6	2.05	14.2	4 21.5	18 2.0	− 0 26.6	+0.6163	.4859	.2475	+83	−11
10 Virginis	6	1.99	13.9	+ 2 36.4	23 33.9	+ 4 56.5	+1.1803	.4853	.2492	+90	+24
γ Virg., *mult.*	2½	1.80	13.6	− 0 45.4	12 17 48.0	− 1 18.5	+0.3226	.4857	.2517	+62	−27
B. A. C. 4277	6	+1.79	−13.6	− 0 52.9	18 52.3	− 0 15.8	+0.1908	.4859	−.2517	+54	−33
38 Virginis	6	1.73	13.2	2 52.0	13 0 18.0	+ 5 1.2	+1.0134	.4865	.2516	+87	+11
k Virginis	6	1.71	13.2	3 7.8	3 56.1	+ 8 33.5	+0.3893	.4874	.2513	+65	−24
46 Virginis	6	1.70	13.4	2 41.3	4 28.1	+ 9 4.6	−0.2306	.4875	.2512	+31	−57
48 Virginis	6	1.68	13.3	2 59.0	6 19.8	+10 53.3	−0.3738	.4880	.2510	+24	−65
θ Virg., *mult.*	4½	+1.66	−12.9	− 4 51.8	9 42.5	− 9 49.5	+0.8494	.4890	−.2504	+85	+ 1
*l*² Virginis	5	1.65	12.8	5 36.2	21 56.9	+ 2 4.9	−1.3836	.4933	.2469	−48	−90
m Virginis	6	1.51	12.2	8 3.9	14 3 12.7	+ 7 12.0	+0.0210	.4956	.2447	+43	−42
B. A. C. 4591	6	1.49	11.9	9 4.5	6 14.6	+10 8.9	+0.3865	.4970	.2432	+63	−24
λ Virginis	4½	1.38	11.1	12 47.3	23 10.7	+ 2 35.9	+0.3994	.5069	.2325	+62	−23
5 Libræ	6	+1.31	−10.6	−14 55.5	15 12 54.3	− 8 4.9	−0.3889	.5171	−.2195	+18	−67
α¹ Libræ	6	1.30	10.5	14 28.3	15 15.9	− 5 47.7	−0.3144	.5187	.2170	+21	−62
α² Libræ	2½	1.30	10.5	15 30.9	15 21.7	− 5 42.0	−0.2871	.5187	.2169	+22	−69
ι² Libræ	5½	1.25	9.7	19 10.2	16 2 18.1	+ 4 54.1	+1.3459	.5278	.2033	+71	+51
28 Libræ	6	1.24	9.9	17 41.9	5 57.7	+ 8 26.6	−0.9694	.5312	.2028	−17	−99
B. A. C. 5109	6	+1.23	− 9.6	−19 14.3	11 28.2	−10 13.6	−0.3864	.5362	−.1897	+14	−67
41 Libræ	6	1.21	9.5	18 53.1	14 24.5	− 7 23.1	−1.3149	.5389	.1849	−53	−90
κ Libræ	5	1.21	9.5	19 16.1	15 48.9	− 6 1.6	−1.1636	.5399	.1827	−35	−90
B. A. C. 5281	6	1.19	9.1	20 36.8	23 6.8	+ 1 1.6	−1.0144	.5464	.1700	−25	−90
δ Scorpii	2½	+1.20	− 8.8	−22 15.6	17 0 7.8	+ 2 0.6	+0.5649	.5473	−.1681	+62	−13
B. A. C. 5335	6½	1.21	8.7	23 15.9	2 41.6	+ 4 29.0	+1.2067	.5498	.1631	+67	+34
B. A. C. 5354	6½	1.21	8.6	23 21.3	3 51.6	+ 5 36.6	+1.1117	.5508	.1608	+67	+24
19 Scorpii	6	1.19	8.4	23 51.8	9 5.6	+10 39.6	+0.8331	.5554	.1504	+66	+ 4
ρ Ophi., *mult.*	5	+1.19	− 8.4	−23 9.2	11 15.9	−11 14.7	−0.2378	.5573	−.1459	+16	−58
22 Scorpii	5	1.19	8.2	24 50.1	13 13.6	− 9 21.2	+1.2569	.5590	.1417	+65	+42
25 Scorpii	6	1.17	8.0	25 18.0	20 19.6	− 2 30.6	+0.7949	.5649	.1256	+65	+ 2
18 Ophiuchi	6	+1.17	− 8.0	−24 24.9	21 33.7	− 1 19.2	−0.2885	.5664	−.1222	+11	−61

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. $\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 5641	6½	+1.17	− 7.9	−24 36.9	17 22 14.2	− 0 40.2	−0.1691	.5666	−.1210	+17	−53
τ Sagittarii	3½	1.37	4.6	27 51.3	20 4 7.5	+ 3 6.6	+0.6872	.5920	.0329	+60	− 4
B. A. C. 6562	6½	1.36	4.2	26 7.2	6 35.5	+ 5 28.6	−1.0035	.5918	.0408	−37	−90
B. A. C. 6628	6	1.40	4.0	28 6.6	10 54.8	+ 9 37.4	+1.2417	.5916	.0538	+62	+46
B. A. C. 6666	6	1.41	3.8	27 14.7	13 0.5	+11 38.1	+0.4750	.5914	.0601	+46	−17
ω Sagittarii	5	+1.48	− 2.8	−26 38.1	23 7.1	− 2 39.8	+0.6107	.5890	−.0902	+58	− 9
A Sagittarii	5	1.48	2.7	26 32.3	21 0 20.9	− 1 28.9	+0.6246	.5886	.0934	+58	− 8
B. A. C. 7077	6	1.49	1.3	25 22.3	13 46.1	+11 24.4	+0.9475	.5828	.1314	+65	+12
B. A. C. 7197	6	1.56	0.3	23 11.9	20 1.3	− 6 35.1	−0.3906	.5793	.1495	+ 8	−68
B. A. C. 7237	6	1.63	− 0.3	24 15.4	21 53.1	− 4 47.6	+0.9649	.5784	.1523	+66	+13
χ Capricorni	6	+1.65	+ 0.9	−21 42.1	22 4 16.0	+ 1 20.6	−0.6086	.5744	−.1676	− 2	−86
27 Capricorni	6	1.65	1.1	21 3.8	4 40.7	+ 1 44.4	−1.1869	.5739	.1688	−40	−90
φ Capricorni	5½	1.67	1.2	21 10.6	7 11.2	+ 4 9.2	−0.6418	.5725	−.1744	− 3	−90
33 Capricorni	5½	1.71	1.6	21 23.4	10 43.2	+ 7 33.2	+0.2047	.5702	+.1825	+42	−32
35 Capricorni	6	1.72	1.6	21 44.6	12 0.2	+ 8 47.3	+0.7998	.5695	.1851	+68	+ 1
37 Capricorni	6	+1.73	+ 2.2	−20 38.9	15 12.3	+11 52.3	+0.2932	.5673	+.1917	+48	−27
ε Capricorni	6	1.74	2.4	20 2.0	16 8.9	−11 13.2	−0.1489	.5668	.1937	+25	−52
κ Capricorni	6	1.76	2.8	19 26.6	18 30.3	− 8 57.0	−0.2840	.5648	.1988	+19	−60
B. A. C. 7550	6	1.76	2.7	20 12.0	18 44.2	− 8 43.6	+0.5289	.5647	.1991	+62	−15
29 Aqua., *mult.*	6	1.82	4.2	17 34.5	23 3 0.0	− 0 45.8	−0.4219	.5594	.2143	+14	−69
56 Aquarii	6	+1.91	+ 6.0	−15 13.9	15 13.2	+11 1.4	−0.0469	.5513	+.2337	+35	−46
τ^1 Aqua., *mult.*	6	1.98	6.9	14 43.4	23 1.6	− 5 26.4	+1.3056	.5466	.2442	+76	+39
τ^2 Aquarii	4	1.98	7.2	14 15.6	23 52.9	− 4 36.9	+1.0457	.5460	.2453	+76	+14
74 Aquarii	6	1.99	8.0	12 17.4	24 1 39.2	− 2 54.2	−0.5104	.5450	.2475	+13	−75
ψ^1 Aquarii	4½	2.07	9.5	9 46.6	11 54.5	+ 7 0.3	−0.4592	.5398	.2579	+17	−71
ψ^2 Aquarii	4½	+2.08	+ 9.6	− 9 52.4	12 51.7	+ 7 55.7	−0.1152	.5394	+.2587	+35	−50
ψ^3 Aquarii	5	2.08	9.6	10 18.1	13 20.8	+ 8 23.7	+0.4440	.5393	.2589	+66	−20
B. A. C. 8214	6½	2.14	10.9	8 9.9	21 4.7	− 8 7.6	+0.3082	.5358	.2649	+59	−27
B. A. C. 8274	6	2.19	10.6	7 5.0	25 3 11.8	− 2 12.5	+0.8466	.5338	.2683	+83	+ 1
27 Piscium	5½	2.24	13.0	4 15.4	8 0.2	+ 2 26.5	−0.7168	.5324	.2708	+ 6	−90
29 Piscium	5½	+2.26	+13.2	− 3 43.8	9 29.5	+ 3 52.8	−0.8468	.5319	+.2715	− 2	−90
4 Ceti	6	2.28	13.5	3 15.1	12 18.0	+ 6 35.9	−0.5689	.5314	.2723	+14	−79
5 Ceti	6	2.28	13.6	3 9.0	12 31.4	+ 6 48.9	−0.6105	.5313	.2725	+12	−82
B. A. C. 5	6	2.29	13.7	2 55.5	12 46.1	+ 7 3.0	−0.7714	.5312	.2725	+ 3	−90
B. A. C. 81	6½	2.37	14.1	2 55.1	20 17.9	− 9 39.7	+1.2797	.5300	.2740	+87	+32
10 Ceti	6	+2.37	+14.8	− 0 44.9	21 18.5	− 8 41.1	−0.6422	.5299	+.2740	+10	−85
14 Ceti	6½	2.42	14.9	1 12.0	26 1 34.6	− 4 33.2	+0.9847	.5293	.2742	+89	+ 9
15 Ceti	6½	2.44	14.9	− 1 11.9	2 48.0	− 3 22.1	+1.3189	.5293	.2742	+89	+36
77 Pisc., *mult.*	6	2.57	17.2	+ 4 14.2	16 3.4	+ 9 27.8	−0.5735	.5298	.2717	+14	−78
e Piscium	5½	2.58	17.4	4 58.9	17 17.4	+10 39.4	−0.9970	.5298	.2713	−10	−85
96 Piscium	6½	+2.71	+18.1	+ 6 38.6	27 3 7.0	− 3 49.9	−0.0420	.5315	+.2664	+41	−45
μ Piscium	5	2.73	17.7	5 29.6	3 38.6	− 3 19.3	+1.2688	.5316	.2662	+90	+33
B. A. C. 481	6½	2.75	18.2	7 0.0	6 25.8	− 0 37.5	+0.4746	.5322	.2644	+72	−18
o Piscium	4	2.81	18.7	8 31.4	10 49.5	+ 3 37.6	+0.0793	.5335	.2613	+48	−37
54 Ceti	6	+2.83	+19.2	+10 25.1	13 23.3	+ 6 6.3	−1.1858	.5343	+.2591	−25	−80
29 Arietis	6½	3.14	19.5	14 28.6	28 8 49.1	+ 0 53.5	−0.4799	.5422	.2387	+18	−65
o Arietis	6	3.22	19.3	14 46.7	14 6.7	+ 6 0.3	+0.4556	.5447	.2316	+71	−15
π Arietis	5½	3.26	19.7	16 56.4	16 13.1	+ 8 2.4	−1.2756	.5456	.2286	−36	−73
ρ^3 Arietis	6	+3.32	+19.5	+17 31.2	19 24.1	+11 6.9	−1.1516	.5476	+.2235	−24	−73
53 Arietis	6	3.39	19.1	17 23.6	29 0 19.5	− 8 7.9	+0.0698	.5499	.2161	+47	−32
54 Arietis	6½	3.41	19.3	18 18.7	0 42.9	− 7 45.3	−0.7973	.5502	.2151	0	−72
13 Tauri	5½	+3.62	+17.7	+19 17.8	15 33.2	+ 6 33.5	+1.1863	.5586	+.1878	+90	+37

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1873.0. $\Delta\alpha$	Red'ns from 1873.0. $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	"	° ′	d h m	h m				°	°
B. A. C. 1143	6	+3.66	+17.9	+20 31.7	29 16 27.3	+ 7 25.8	+0.0853	.5592	+.1858	+48	-28
32 Tauri	6	3.76	17.5	22 6.9	21 43.8	-11 29.1	-0.5984	.5621	.1750	+11	-64
33 Tauri	6	3.79	17.6	22 48.6	21 48.2	-11 24.9	-1.3029	.5621	.1749	-47	-67
A¹ Tauri	4½	3.80	16.9	21 44.2	30 1 3.7	- 8 16.6	+0.3627	.5636	.1682	+66	-12
A² Tauri	6	3.81	16.8	21 40.1	1 19.8	- 8 1.0	+0.4782	.5638	.1675	+74	- 6
62 Tauri	6	+3.97	+16.0	+24 0.5	9 8.3	- 0 29.7	-0.7060	.5677	+.1494	+ 4	-66
υ¹ Tauri	4½	3.94	15.5	22 31.7	10 7.8	+ 0 27.5	+0.9743	.5682	.1470	+90	+25
υ² Tauri	6	3.95	15.6	22 42.7	10 32.6	+ 0 51.4	+0.8435	.5686	.1457	+90	+17
B. A. C. 1518	6	4.12	13.5	24 23.4	22 28.9	-11 39.2	+0.6691	.5736	.1155	+90	+10
k Tauri	5½	4.15	13.4	24 51.3	23 14.7	-10 55.2	+0.2716	.5738	.1140	+60	-11
B. A. C. 1746	6½	+4.38	+10.1	+27 34.8	31 14 33.1	+ 3 48.2	-1.1476	.5782	+.0719	-31	-63
125 Tauri	6	4.35	9.6	25 49.6	16 8.1	+ 5 19.6	+0.7989	.5784	.0678	+90	+22
136 Tauri	5	4.42	8.2	27 34.9	21 35.0	+10 33.9	-0.7140	.5790	.0519	+ 2	-62
139 Tauri	5½	+4.39	+ 7.5	+25 56.3	23 30.6	-11 34.9	+1.1056	.5790	+.0463	+90	+44

NOTE.—B. A. C., British Association Catalogue.

WASHINGTON MEAN TIME.

JANUARY.

			d	h	m	s
III.	Eclipse	Disapp.	1	6	42	7.5
II.	Shadow	Ingress	1	7	57	
I.	Eclipse	Disapp.	1	8	46	1.9
II.	Transit	Ingress W.	1	9	53	
III.	Eclipse	Reapp. W.	1	10	15	38.5
III.	Occult.	Disapp. W.	1	10	28	
II.	Shadow	Egress W.	1	10	51	
I.	Occult.	Reapp. W.	1	12	0	
II.	Transit	Egress W.	1	12	45	
III.	Occult.	Reapp. W.	1	14	8	
IV.	Shadow	Ingress W.	1	14	28	
IV.	Shadow	Egress	1	19	23	
IV.	Transit	Ingress	1	23	20	
IV.	Transit	Egress	2	4	4	
I.	Shadow	Ingress	2	5	57	
I.	Transit	Ingress	2	6	53	
I.	Shadow	Egress	2	8	17	
I.	Transit	Egress	2	9	13	
II.	Eclipse	Disapp.	3	2	35	27.9
I.	Eclipse	Disapp.	3	3	14	18.4
I.	Occult.	Reapp.	3	6	27	
II.	Occult.	Reapp.	3	7	20	
I.	Shadow	Ingress	4	0	26	
I.	Transit	Ingress	4	1	20	
I.	Shadow	Egress	4	2	46	
I.	Transit	Egress	4	3	40	
III.	Shadow	Ingress	4	20	29	
II.	Shadow	Ingress	4	21	13	
I.	Eclipse	Disapp.	4	21	42	36.5
II.	Transit	Ingress	4	23	3	
III.	Transit	Ingress	5	0	5	
II.	Shadow	Egress	5	0	8	
III.	Shadow	Egress	5	0	12	
I.	Occult.	Reapp.	5	0	54	
II.	Transit	Egress	5	1	55	
III.	Transit	Egress	5	3	45	
I.	Shadow	Ingress	5	18	55	
I.	Transit	Ingress	5	19	47	
I.	Shadow	Egress	5	21	15	
I.	Transit	Egress	5	22	7	
II.	Eclipse	Disapp. W.	6	15	54	13.0
I.	Eclipse	Disapp. W.	6	16	10	55.1
I.	Occult.	Reapp.	6	19	21	
II.	Occult.	Reapp.	6	20	30	
I.	Shadow	Ingress W.	7	13	24	
I.	Transit	Ingress W.	7	14	13	
I.	Shadow	Egress W.	7	15	44	
I.	Transit	Egress W.	7	16	33	
II.	Shadow	Ingress W.	8	10	30	
I.	Eclipse	Disapp. W.	8	10	39	12.2
III.	Eclipse	Disapp. W.	8	10	39	40.9
II.	Transit	Ingress W.	8	12	12	
II.	Shadow	Egress W.	8	13	24	
I.	Occult	Reapp. W.	8	13	47	
II.	Transit	Egress W.	8	15	4	
III.	Occult.	Reapp. W.	8	17	36	
I.	Shadow	Ingress	9	7	52	
I.	Transit	Ingress	9	8	40	
I.	Shadow	Egress W.	9	10	12	
I.	Transit	Egress W.	9	11	0	
IV.	Eclipse	Disapp.	10	1	1	59.6
I.	Eclipse	Disapp.	10	5	7	30.2
II.	Eclipse	Disapp.	10	5	11	50.5
IV.	Eclipse	Reapp.	10	5	46	23.4
I.	Occult.	Reapp.	10	8	13	
IV.	Occult.	Disapp.	10	8	35	
II.	Occult.	Reapp. W.	10	9	41	
IV.	Occult.	Reapp. W.	10	13	18	
I.	Shadow	Ingress	11	2	20	
I	Transit	Ingress	11	3	7	
I.	Shadow	Egress	11	4	40	
I.	Transit	Egress	11	5	27	
I.	Eclipse	Disapp.	11	23	35	49.5
II.	Shadow	Ingress	11	23	46	
III.	Shadow	Ingress	12	0	27	
II.	Transit	Ingress	12	1	20	
I.	Occult.	Reapp.	12	2	40	
II.	Shadow	Egress	12	2	41	
III.	Transit	Ingress	12	3	32	
III.	Shadow	Egress	12	4	10	
II.	Transit	Egress	12	4	12	
III.	Transit	Egress	12	7	12	
I.	Shadow	Ingress	12	20	49	
I.	Transit	Ingress	12	21	33	
I.	Shadow	Egress	12	23	9	
I.	Transit	Egress	12	23	53	
I.	Eclipse	Disapp. W.	13	18	4	9.6
II.	Eclipse	Disapp.	13	18	30	37.0
I.	Occult	Reapp.	13	21	6	
II.	Occult	Reapp.	13	22	51	
I.	Shadow	Ingress W.	14	15	18	
I.	Transit	Ingress W.	14	16	0	
I.	Shadow	Egress W.	14	17	38	
I.	Transit	Egress W.	14	18	20	
I.	Eclipse	Disapp. W.	15	12	32	28.0
II.	Shadow	Ingress W.	15	13	3	
II.	Transit	Ingress W.	15	14	28	
III.	Eclipse	Disapp. W.	15	14	37	26.5

W.—Visible at Washington.

WASHINGTON MEAN TIME.

JANUARY.

				d	h	m	s
I.	Occult.	Reapp.	W.	15	15	32	
II.	Shadow	Egress	W.	15	15	58	
II.	Transit	Egress	W.	15	17	20	
III.	Occult.	Reapp.		15	21	1	
I.	Shadow	Ingress	W.	16	9	46	
I.	Transit	Ingress	W.	16	10	26	
I.	Shadow	Egress	W.	16	12	6	
I.	Transit	Egress	W.	16	12	46	
I.	Eclipse	Disapp.		17	7	0	47.5
II.	Eclipse	Disapp.		17	7	48	17.3
I.	Occult.	Reapp.	W.	17	9	58	
II.	Occult.	Reapp.	W.	17	12	0	
I.	Shadow	Ingress		18	4	14	
I.	Transit	Ingress		18	4	52	
I.	Shadow	Egress		18	6	34	
I.	Transit	Egress		18	7	12	
IV.	Shadow	Ingress	W.	18	8	26	
IV.	Shadow	Egress	W.	18	13	20	
IV.	Transit	Ingress	W.	18	14	23	
IV.	Transit	Egress		18	19	6	
I.	Eclipse	Disapp.		19	1	29	8.1
II.	Shadow	Ingress		19	2	20	
II.	Transit	Ingress		19	3	36	
I.	Occult	Reapp.		19	4	24	
III.	Shadow	Ingress		19	4	25	
II.	Shadow	Egress		19	5	14	
II.	Transit	Egress		19	6	28	
III.	Transit	Ingress		19	6	55	
III.	Shadow	Egress	W.	19	8	8	
III.	Transit	Egress	W.	19	10	35	
I.	Shadow	Ingress		19	22	42	
I.	Transit	Ingress		19	23	18	
I.	Shadow	Egress		20	1	2	
I.	Transit	Egress		20	1	38	
I.	Eclipse	Disapp.		20	19	57	30.0
II.	Eclipse	Disapp.		20	21	7	5.9
I.	Occult	Reapp.		20	22	50	
II.	Occult.	Reapp.		21	1	9	
I.	Shadow	Ingress	W.	21	17	11	
I.	Transit	Ingress	W.	21	17	45	
I.	Shadow	Egress		21	19	31	
I.	Transit	Egress		21	20	5	
I.	Eclipse	Disapp.	W.	22	14	25	50.1
II.	Shadow	Ingress	W.	22	15	37	
II.	Transit	Ingress	W.	22	16	43	
I.	Occult.	Reapp.	W.	22	17	16	
II.	Shadow	Egress		22	18	31	
III.	Eclipse	Disapp.		22	18	35	56.0
II.	Transit	Egress		22	19	35	
III.	Occult.	Reapp.		23	0	22	
I.	Shadow	Ingress	W.	23	11	39	
I.	Transit	Ingress	W.	23	12	11	
I.	Shadow	Egress	W.	23	13	59	
I.	Transit	Egress	W.	23	14	31	
I.	Eclipse	Disapp.	W.	24	8	54	11.3
II.	Eclipse	Disapp.	W.	24	10	24	49.4
I.	Occult.	Reapp.	W.	24	11	42	
II.	Occult.	Reapp.	W.	24	14	18	
I.	Shadow	Ingress		25	6	8	
I.	Transit	Ingress		25	6	37	
I.	Shadow	Egress	W.	25	8	28	
I.	Transit	Egress	W.	25	8	57	
I.	Eclipse	Disapp.		26	3	22	33.4
II.	Shadow	Ingress		26	4	53	
II.	Transit	Ingress		26	5	50	
I.	Occult.	Reapp.		26	6	8	
II.	Shadow	Egress		26	7	48	
III.	Shadow	Ingress	W.	26	8	23	
II.	Transit	Egress	W.	26	8	42	
III.	Transit	Ingress	W.	26	10	15	
III.	Shadow	Egress	W.	26	12	6	
III.	Transit	Egress	W.	26	13	54	
IV.	Eclipse	Disapp.		26	19	1	28.5
I.	Shadow	Ingress		27	0	36	
I.	Transit	Ingress		27	1	3	
I.	Shadow	Egress		27	2	56	
I.	Transit	Egress		27	3	23	
IV.	Occult.	Reapp.		27	3	56	
I.	Eclipse	Disapp.		27	21	50	57.1
II.	Eclipse	Disapp.		27	23	43	40.0
I.	Occult.	Reapp.		28	0	34	
II.	Occult.	Reapp.		28	3	27	
I.	Shadow	Ingress		28	19	5	
I.	Transit	Ingress		28	19	29	
I.	Shadow	Egress		28	21	25	
I.	Transit	Egress		28	21	49	
I.	Eclipse	Disapp.	W.	29	16	19	19.0
II.	Shadow	Ingress		29	18	10	
II.	Transit	Ingress		29	18	56	
I.	Occult.	Reapp.		29	19	0	
II.	Shadow	Egress		29	21	4	
II.	Transit	Egress		29	21	48	
III.	Eclipse	Disapp.		29	22	34	4.8
III.	Occult.	Reapp.		30	3	41	
I.	Shadow	Ingress	W.	30	13	34	
I.	Transit	Ingress	W.	30	13	55	
I.	Shadow	Egress	W.	30	15	54	
I.	Transit	Egress	W.	30	16	15	

W.—Visible at Washington.

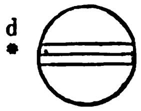
WASHINGTON MEAN TIME.

JANUARY.

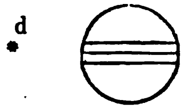
				d	h	m	s					d	h	m	s
I.	Eclipse	Disapp.	W.	31	10	47	42.1	I.	Occult.	Reapp.	W.	31	13	26	
II.	Eclipse	Disapp.	W.	31	13	1	27.0	II.	Occult.	Reapp.	W.	31	16	35	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

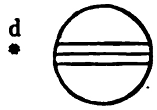
I.



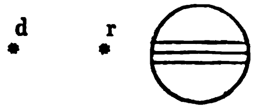
III.



II.



IV.



FEBRUARY.

				d	h	m	s					d	h	m	s
I.	Shadow	Ingress	W.	1	8	2		I.	Eclipse	Disapp.		5	18	12	55.9
I.	Transit	Ingress	W.	1	8	21		I.	Occult.	Reapp.		5	20	43	
I.	Shadow	Egress	W.	1	10	22		II.	Shadow	Ingress		5	20	44	
I.	Transit	Egress	W.	1	10	41		II.	Transit	Ingress		5	21	9	
I.	Eclipse	Disapp.		2	5	16	5.9	II.	Shadow	Egress		5	23	38	
II.	Shadow	Ingress	W.	2	7	27		II.	Transit	Egress		6	0	1	
I.	Occult.	Reapp.	W.	2	7	52		III.	Eclipse	Disapp.		6	2	32	35.4
II.	Transit	Ingress	W.	2	8	3		III.	Occult.	Reapp.		6	6	58	
II.	Shadow	Egress	W.	2	10	21		I.	Shadow	Ingress	W.	6	15	28	
II.	Transit	Egress	W.	2	10	55		I.	Transit	Ingress	W.	6	15	39	
III.	Shadow	Ingress	W.	2	12	22		I.	Shadow	Egress	W.	6	17	48	
III.	Transit	Ingress	W.	2	13	32		I.	Transit	Egress		6	17	59	
III.	Shadow	Egress	W.	2	16	4		I.	Eclipse	Disapp.	W.	7	12	41	21.2
III.	Transit	Egress	W.	2	17	12		I.	Occult	Reapp.	W.	7	15	9	
I.	Shadow	Ingress		3	2	31		II.	Eclipse	Disapp.	W.	7	15	38	9.0
I.	Transit	Ingress		3	2	47		II.	Occult.	Reapp.		7	18	50	
I.	Shadow	Egress		3	4	51		I.	Shadow	Ingress	W.	8	9	56	
I.	Transit	Egress		3	5	7		I.	Transit	Ingress	W.	8	10	5	
I.	Eclipse	Disapp.		3	23	44	32.0	I.	Shadow	Egress	W.	8	12	16	
I.	Occult.	Reapp.		4	2	18		I.	Transit	Egress	W.	8	12	25	
II.	Eclipse	Disapp.		4	2	20	19.5	I.	Eclipse	Disapp.	W.	9	7	9	46.8
IV.	Shadow	Ingress		4	2	25		I.	Occult.	Reapp.	W.	9	9	35	
IV.	Transit	Ingress		4	4	48		II.	Shadow	Ingress	W.	9	10	1	
II.	Occult.	Reapp.		4	5	43		II.	Transit	Ingress	W.	9	10	16	
IV.	Shadow	Egress	W.	4	7	17		II.	Shadow	Egress	W.	9	12	55	
IV.	Transit	Egress	W.	4	9	30		II.	Transit	Egress	W.	9	13	8	
I.	Shadow	Ingress		4	20	59		III.	Shadow	Ingress	W.	9	16	20	
I.	Transit	Ingress		4	21	13		III.	Transit	Ingress	W.	9	16	49	
I.	Shadow	Egress		4	23	19		III.	Shadow	Egress		9	20	2	
I.	Transit	Egress		4	23	33		III.	Transit	Egress		9	20	29	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

FEBRUARY.

				d	h	m	s					d	h	m	s
I.	Shadow	Ingress		10	4	25		I.	Eclipse	Reapp.		18	5	47	4.2
I.	Transit	Ingress		10	4	31		II.	Occult.	Disapp.	W.	18	7	20	
I.	Shadow	Egress	W.	10	6	45		II.	Eclipse	Reapp.	W.	18	10	23	43.5
I.	Transit	Egress	W.	10	6	51		I.	Transit	Ingress		19	0	41	
I.	Eclipse	Disapp.		11	1	38	15.1	I.	Shadow	Ingress		19	0	48	
I.	Occult.	Reapp.		11	4	1		I.	Transit	Egress		19	3	1	
II.	Eclipse	Disapp.		11	4	57	3.4	I.	Shadow	Egress		19	3	8	
II.	Occult.	Reapp.	W.	11	7	57		I.	Occult.	Disapp.		19	21	50	
I.	Shadow	Ingress		11	22	53		I.	Eclipse	Reapp.		20	0	15	31.8
I.	Transit	Ingress		11	22	57		II.	Transit	Ingress		20	1	35	
I.	Shadow	Egress		12	1	13		II.	Shadow	Ingress		20	1	52	
I.	Transit	Egress		12	1	17		II.	Transit	Egress		20	4	28	
IV.	Eclipse	Disapp.	W.	12	13	1	32.0	II.	Shadow	Egress		20	4	46	
IV.	Occult	Reapp.		12	18	8		III.	Occult.	Disapp.	W.	20	9	49	
I.	Eclipse	Disapp.		12	20	6	40.9	III.	Eclipse	Reapp.	W.	20	14	1	16.3
I.	Occult.	Reapp.		12	22	27		IV.	Transit	Ingress		20	18	55	
II.	Shadow	Ingress		12	23	18		I.	Transit	Ingress		20	19	7	
II.	Transit	Ingress		12	23	22		I.	Shadow	Ingress		20	19	17	
II.	Shadow	Egress		13	2	12		IV.	Shadow	Ingress		20	20	24	
II.	Transit	Egress		13	2	15		I.	Transit	Egress		20	21	27	
III.	Eclipse	Disapp.	W.	13	6	30	41.2	I.	Shadow	Egress		20	21	37	
III.	Occult.	Reapp.	W.	13	10	13		IV.	Transit	Egress		20	23	40	
I.	Shadow	Ingress	W.	13	17	22		IV.	Shadow	Egress		21	1	15	
I.	Transit	Ingress	W.	13	17	23		I.	Occult	Disapp.	W.	21	16	16	
I.	Shadow	Egress		13	19	42		I.	Eclipse	Reapp.		21	18	44	1.6
I.	Transit	Egress		13	19	43		II.	Occult.	Disapp.		21	20	28	
I.	Occult.	Disapp.	W.	14	14	33		II.	Eclipse	Reapp.		21	23	41	31.3
I.	Occult.	Reapp.	W.	14	16	52		I.	Transit	Ingress	W.	22	13	33	
II.	Occult.	Disapp.		14	18	13		I.	Shadow	Ingress	W.	22	13	45	
II.	Eclipse	Reapp.		14	21	4	57.1	I.	Transit	Egress	W.	22	15	53	
I.	Transit	Ingress	W.	15	11	49		I.	Shadow	Egress	W.	22	16	5	
I.	Shadow	Ingress	W.	15	11	51		I.	Occult.	Disapp.	W.	23	10	42	
I.	Transit	Egress	W.	15	14	9		I.	Eclipse	Reapp.	W.	23	13	12	30.9
I.	Shadow	Egress	W.	15	14	11		II.	Transit	Ingress	W.	23	14	42	
I.	Occult.	Disapp.	W.	16	8	58		II.	Shadow	Ingress	W.	23	15	9	
I.	Eclipse	Reapp.	W.	16	11	18	33.6	II.	Transit	Egress	W.	23	17	34	
II.	Transit	Ingress	W.	16	12	29		II.	Shadow	Egress		23	18	3	
II.	Shadow	Ingress	W.	16	12	35		III.	Transit	Ingress		23	23	20	
II.	Transit	Egress	W.	16	15	21		III.	Shadow	Ingress		24	0	17	
II.	Shadow	Egress	W.	16	15	29		III.	Transit	Egress		24	3	2	
III.	Transit	Ingress		16	20	5		III.	Shadow	Egress		24	4	0	
III.	Shadow	Ingress		16	20	19		I.	Transit	Ingress	W.	24	7	59	
III.	Transit	Egress		16	23	45		I.	Shadow	Ingress	W.	24	8	14	
III.	Shadow	Egress		17	0	0		I.	Transit	Egress	W.	24	10	19	
I.	Transit	Ingress	W.	17	6	15		I.	Shadow	Egress	W.	24	10	34	
I.	Shadow	Ingress	W.	17	6	20		I.	Occult.	Disapp.		25	5	8	
I.	Transit	Egress	W.	17	8	35		I.	Eclipse	Reapp.	W.	25	7	41	4.0
I.	Shadow	Egress	W.	17	8	40		II.	Occult	Disapp.	W.	25	9	36	
I.	Occult.	Disapp.		18	3	24		II.	Eclipse	Reapp.	W.	25	13	0	16.9

W.—Visible at Washington.

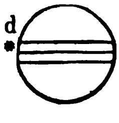
WASHINGTON MEAN TIME.

FEBRUARY.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress	26	2	25		III.	Occult.	Disapp. W.	27	13	5	
I.	Shadow	Ingress	26	2	42		III.	Eclipse	Reapp.	27	17	59	29.4
I.	Transit	Egress	26	4	45		I.	Transit	Ingress	27	20	51	
I.	Shadow	Egress	26	5	2		I.	Shadow	Ingress	27	21	11	
I.	Occult.	Disapp.	26	23	34		I.	Transit	Egress	27	23	11	
I.	Eclipse	Reapp.	27	2	9	53.9	I.	Shadow	Egress	27	23	31	
II.	Transit	Ingress	27	3	49		I.	Occult.	Disapp.	28	18	0	
II.	Shadow	Ingress	27	4	26		I.	Eclipse	Reapp.	28	20	38	6.1
II.	Transit	Egress W.	27	6	41		II.	Occult.	Disapp.	28	22	44	
II.	Shadow	Egress W.	27	7	20								

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



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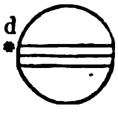

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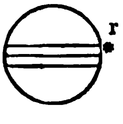
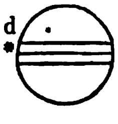


IV.



MARCH.

			d	h	m	s				d	h	m	s
II.	Eclipse	Reapp.	1	2	18	6.1	I.	Eclipse	Reapp. W.	4	9	35	12.8
IV.	Occult.	Disapp.	1	3	32		II.	Occult.	Disapp. W.	4	11	52	
IV.	Eclipse	Reapp. W.	1	11	42	25.7	II.	Eclipse	Reapp. W.	4	15	36	49.7
I.	Transit	Ingress W.	1	15	17		I.	Transit	Ingress	5	4	10	
I.	Shadow	Ingress W.	1	15	39		I.	Shadow	Ingress	5	4	37	
I.	Transit	Egress	1	17	37		I.	Transit	Egress W.	5	6	30	
I.	Shadow	Egress	1	17	59		I.	Shadow	Egress W.	5	6	57	
I.	Occult.	Disapp. W.	2	12	26		I.	Occult.	Disapp.	6	1	18	
I.	Eclipse	Reapp. W.	2	15	6	37.5	I.	Eclipse	Reapp.	6	4	3	44.7
II.	Transit	Ingress W.	2	16	56		II.	Transit	Ingress	6	6	3	
II.	Shadow	Ingress	2	17	44		II.	Shadow	Ingress W.	6	7	1	
II.	Transit	Egress	2	19	48		II.	Transit	Egress W.	6	8	55	
II.	Shadow	Egress	2	20	38		II.	Shadow	Egress W.	6	9	55	
III.	Transit	Ingress	3	2	39		III.	Occult.	Disapp. W.	6	16	23	
III.	Shadow	Ingress	3	4	17		III.	Eclipse	Reapp.	6	21	57	56.3
III.	Transit	Egress W.	3	6	20		I.	Transit	Ingress	6	22	36	
III.	Shadow	Egress W.	3	7	59		I.	Shadow	Ingress	6	23	5	
I.	Transit	Ingress W.	3	9	43		I.	Transit	Egress	7	0	56	
I.	Shadow	Ingress W.	3	10	8		I.	Shadow	Egress	7	1	25	
I.	Transit	Egress W.	3	12	3		I.	Occult.	Disapp.	7	19	44	
I.	Shadow	Egress W.	3	12	28		I.	Eclipse	Reapp.	7	22	32	19.1
I.	Occult.	Disapp. W.	4	6	52		II.	Occult.	Disapp.	8	1	1	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

MARCH.

			d	h	m	s
II.	Eclipse	Reapp.	8	4	54	40.5
I.	Transit	Ingress	8	17	2	
I.	Shadow	Ingress	8	17	34	
I.	Transit	Egress	8	19	22	
I.	Shadow	Egress	8	19	54	
IV.	Transit	Ingress W.	9	9	14	
IV.	Transit	Egress W.	9	14	0	
I.	Occult.	Disapp. W.	9	14	10	
IV.	Shadow	Ingress W.	9	14	24	
I.	Eclipse	Reapp.	9	17	0	52.2
II.	Transit	Ingress	9	19	11	
IV.	Shadow	Egress	9	19	12	
II.	Shadow	Ingress	9	20	19	
II.	Transit	Egress	9	22	3	
II.	Shadow	Egress	9	23	12	
III.	Transit	Ingress	10	5	59	
III.	Shadow	Ingress W.	10	8	16	
III.	Transit	Egress W.	10	9	40	
I.	Transit	Ingress W.	10	11	29	
III.	Shadow	Egress W.	10	11	58	
I	Shadow	Ingress W.	10	12	2	
I.	Transit	Egress W.	10	13	49	
I.	Shadow	Egress W.	10	14	22	
I.	Occult.	Disapp. W.	11	8	36	
I.	Eclipse	Reapp. W.	11	11	29	29.9
II.	Occult.	Disapp. W.	11	14	10	
II.	Eclipse	Reapp.	11	18	13	22.4
I.	Transit	Ingress	12	5	55	
I.	Shadow	Ingress W.	12	6	31	
I.	Transit	Egress W.	12	8	15	
I.	Shadow	Egress W.	12	8	51	
I.	Occult.	Disapp.	13	3	3	
I.	Eclipse	Reapp.	13	5	58	3.8
II.	Transit	Ingress W.	13	8	19	
II.	Shadow	Ingress W.	13	9	36	
II.	Transit	Egress W.	13	11	11	
II.	Shadow	Egress W.	13	12	29	
III.	Occult.	Disapp.	13	19	45	
I.	Transit	Ingress	14	0	22	
I.	Shadow	Ingress	14	1	0	
III.	Eclipse	Reapp.	14	1	57	8.4
I.	Transit	Egress	14	2	42	
I.	Shadow	Egress	14	3	20	
I.	Occult.	Disapp.	14	21	29	
I.	Eclipse	Reapp.	15	0	26	40.3
II.	Occult.	Disapp.	15	3	19	
II.	Eclipse	Reapp. W.	15	7	31	14.7
I.	Transit	Ingress	15	18	48	
I.	Shadow	Ingress	15	19	28	
I.	Transit	Egress	15	21	8	
I.	Shadow	Egress	15	21	48	
I.	Occult.	Disapp. W.	16	15	55	
I.	Eclipse	Reapp.	16	18	55	15.3
II.	Transit	Ingress	16	21	28	
II.	Shadow	Ingress	16	22	54	
II.	Transit	Egress	17	0	20	
II.	Shadow	Egress	17	1	47	
III.	Transit	Ingress W.	17	9	21	
III.	Shadow	Ingress W.	17	12	15	
III.	Transit	Egress W.	17	13	2	
I.	Transit	Ingress W.	17	13	15	
I.	Shadow	Ingress W.	17	13	57	
I.	Transit	Egress W.	17	15	35	
III.	Shadow	Egress	17	15	56	
I.	Shadow	Egress	17	16	17	
IV.	Occult.	Disapp.	17	18	5	
IV.	Occult.	Reapp.	17	22	53	
IV.	Eclipse	Disapp.	18	1	4	25.1
IV.	Eclipse	Reapp.	18	5	41	47.1
I.	Occult.	Disapp. W.	18	10	22	
I.	Eclipse	Reapp. W.	18	13	23	55.0
II.	Occult.	Disapp.	18	16	29	
II.	Eclipse	Reapp.	18	20	49	54.4
I.	Transit	Ingress W.	19	7	41	
I.	Shadow	Ingress W.	19	8	26	
I.	Transit	Egress W.	19	10	1	
I.	Shadow	Egress W.	19	10	46	
I.	Occult.	Disapp.	20	4	49	
I.	Eclipse	Reapp. W.	20	7	52	30.8
II.	Transit	Ingress W.	20	10	37	
II.	Shadow	Ingress W.	20	12	11	
II.	Transit	Egress W.	20	13	30	
II.	Shadow	Egress W.	20	15	4	
III.	Occult.	Disapp.	20	23	9	
I.	Transit	Ingress	21	2	8	
I.	Shadow	Ingress	21	2	55	
I.	Transit	Egress	21	4	28	
I.	Shadow	Egress	21	5	15	
III.	Eclipse	Reapp.	21	5	55	57.7
I.	Occult.	Disapp.	21	23	16	
I.	Eclipse	Reapp.	22	2	21	9.4
II.	Occult.	Disapp.	22	5	39	
II.	Eclipse	Reapp. W.	22	10	7	47.4
I.	Transit	Ingress	22	20	35	
I.	Shadow	Ingress	22	21	24	
I.	Transit	Egress	22	22	55	
I.	Shadow	Egress	22	23	44	
I.	Occult.	Disapp.	23	17	42	

W.—Visible at Washington.

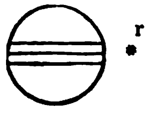
WASHINGTON MEAN TIME.

MARCH.

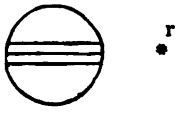
			d	h	m	s				d	h	m	s
I.	Eclipse	Reapp.	23	20	49	46.0	III.	Occult.	Disapp.	28	2	38	
II.	Transit	Ingress	23	23	47		I.	Transit	Ingress	28	3	56	
II.	Shadow	Ingress	24	1	29		I.	Shadow	Ingress	28	4	50	
II.	Transit	Egress	24	2	40		I.	Transit	Egress	28	6	16	
II.	Shadow	Egress	24	4	22		III.	Occult.	Reapp.	28	6	20	
III.	Transit	Ingress W.	24	12	48		III.	Eclipse	Disapp.	28	6	23	48.9
I.	Transit	Ingress W.	24	15	2		I.	Shadow	Egress W.	28	7	10	
I.	Shadow	Ingress	24	15	52		III.	Eclipse	Reapp. W.	28	9	55	5.3
III.	Shadow	Ingress	24	16	14		I.	Occult.	Disapp.	29	1	3	
III.	Transit	Egress	24	16	29		I.	Eclipse	Reapp.	29	4	15	45.8
I.	Transit	Egress	24	17	22		II.	Occult.	Disapp. W.	29	8	1	
I.	Shadow	Egress	24	18	12		II.	Eclipse	Reapp. W.	29	12	44	16.9
III.	Shadow	Egress	24	19	55		I.	Transit	Ingress	29	22	23	
I.	Occult.	Disapp. W.	25	12	9		I.	Shadow	Ingress	29	23	19	
I.	Eclipse	Reapp. W.	25	15	18	27.8	I.	Transit	Egress	30	0	43	
II.	Occult.	Disapp.	25	18	50		I.	Shadow	Egress	30	1	39	
II.	Eclipse	Reapp.	25	23	26	23.5	I.	Occult.	Disapp.	30	19	30	
IV.	Transit	Ingress	26	0	9		I.	Eclipse	Reapp.	30	22	44	23.9
IV.	Transit	Egress	26	5	0		II.	Transit	Ingress	31	2	8	
IV.	Shadow	Ingress W.	26	8	25		II.	Shadow	Ingress	31	4	4	
I.	Transit	Ingress W.	26	9	29		II.	Transit	Egress	31	5	1	
I.	Shadow	Ingress W.	26	10	21		II.	Shadow	Egress	31	6	57	
I.	Transit	Egress W.	26	11	49		III.	Transit	Ingress	31	16	19	
I.	Shadow	Egress W.	26	12	41		I	Transit	Ingress	31	16	50	
IV.	Shadow	Egress W.	26	13	12		I.	Shadow	Ingress	31	17	48	
I.	Occult.	Disapp.	27	6	36		I.	Transit	Egress	31	19	10	
I.	Eclipse	Reapp. W.	27	9	47	5.5	III.	Transit	Egress	31	20	0	
II.	Transit	Ingress W.	27	12	57		I.	Shadow	Egress	31	20	8	
II.	Shadow	Ingress W.	27	14	46		III.	Shadow	Ingress	31	20	13	
II.	Transit	Egress	27	15	50		III.	Shadow	Egress	31	23	54	
II.	Shadow	Egress	27	17	39								

Phases of the Eclipses of the Satellites for an Inverting Telescope.

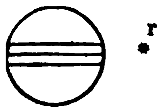
I.



III.



II.



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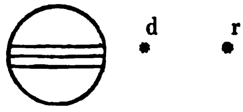


W.—Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

			d	h	m	s				d	h	m	s
I.	Occult.	Disapp. W.	1	13	57		I.	Eclipse	Reapp.	8	19	7	52.8
I.	Eclipse	Reapp.	1	17	13	7.2	II.	Occult.	Disapp.	8	23	38	
II.	Occult.	Disapp.	1	21	13		II.	Eclipse	Reapp.	9	4	39	8.8
II.	Eclipse	Reapp.	2	2	2	49.1	I.	Transit	Ingress W.	9	13	6	
I.	Transit	Ingress W.	2	11	17		I.	Shadow	Ingress W.	9	14	11	
I.	Shadow	Ingress W.	2	12	16		I.	Transit	Egress	9	15	26	
I.	Transit	Egress W.	2	13	37		I.	Shadow	Egress	9	16	31	
I.	Shadow	Egress W.	2	14	36		I.	Occult.	Disapp. W.	10	10	13	
I.	Occult.	Disapp. W.	3	8	24		I.	Eclipse	Reapp. W.	10	13	36	33.5
IV.	Occult.	Disapp. W.	3	9	24		II.	Transit	Ingress	10	17	45	
I.	Eclipse	Reapp. W.	3	11	41	46.1	II.	Shadow	Ingress	10	19	58	
IV.	Occult.	Reapp. W.	3	14	15		II.	Transit	Egress	10	20	38	
II.	Transit	Ingress	3	15	20		II.	Shadow	Egress	10	22	51	
II.	Shadow	Ingress	3	17	22		I.	Transit	Ingress W.	11	7	33	
II.	Transit	Egress	3	18	13		I.	Shadow	Ingress W.	11	8	39	
IV.	Eclipse	Disapp.	3	19	6	23.9	III.	Occult.	Disapp. W.	11	9	48	
II.	Shadow	Egress	3	20	15		I.	Transit	Egress W.	11	9	53	
IV.	Eclipse	Reapp.	3	23	41	17.9	I.	Shadow	Egress W.	11	10	59	
I.	Transit	Ingress	4	5	44		III.	Occult.	Reapp. W.	11	13	30	
III.	Occult.	Disapp.	4	6	11		III.	Eclipse	Disapp. W.	11	14	21	43.5
I.	Shadow	Ingress	4	6	45		IV.	Transit	Ingress	11	15	56	
I.	Transit	Egress W.	4	8	4		III.	Eclipse	Reapp.	11	17	52	25.5
I.	Shadow	Egress W.	4	9	5		IV.	Transit	Egress	11	20	47	
III.	Occult.	Reapp. W.	4	9	52		IV.	Shadow	Ingress	12	2	26	
III.	Eclipse	Disapp. W.	4	10	22	46.3	I.	Occult.	Disapp.	12	4	40	
III.	Eclipse	Reapp. W.	4	13	53	45.9	IV.	Shadow	Egress W.	12	7	10	
I.	Occult.	Disapp.	5	2	51		I.	Eclipse	Reapp. W.	12	8	5	17.4
I.	Eclipse	Reapp.	5	6	10	28.1	II.	Occult	Disapp. W.	12	12	51	
II.	Occult.	Disapp. W.	5	10	25		II.	Eclipse	Reapp.	12	17	57	0.4
II.	Eclipse	Reapp.	5	15	20	41.8	I.	Transit	Ingress	13	2	0	
I.	Transit	Ingress	6	0	11		I.	Shadow	Ingress	13	3	8	
I.	Shadow	Ingress	6	1	13		I.	Transit	Egress	13	4	20	
I.	Transit	Egress	6	2	31		I.	Shadow	Egress	13	5	28	
I.	Shadow	Egress	6	3	33		I.	Occult.	Disapp.	13	23	8	
I.	Occult.	Disapp.	6	21	18		I.	Eclipse	Reapp.	14	2	33	58.0
I.	Eclipse	Reapp.	7	0	39	7.6	II.	Transit	Ingress W.	14	6	58	
II.	Transit	Ingress	7	4	32		II.	Shadow	Ingress W.	14	9	16	
II.	Shadow	Ingress	7	6	40		II.	Transit	Egress W.	14	9	51	
II.	Transit	Egress W.	7	7	25		II.	Shadow	Egress W.	14	12	8	
II.	Shadow	Egress W.	7	9	33		I.	Transit	Ingress	14	20	28	
I.	Transit	Ingress	7	18	39		I.	Shadow	Ingress	14	21	37	
I.	Shadow	Ingress	7	19	42		I.	Transit	Egress	14	22	48	
III.	Transit	Ingress	7	19	55		III.	Transit	Ingress	14	23	35	
I.	Transit	Egress	7	20	58		I.	Shadow	Egress	14	23	57	
I.	Shadow	Egress	7	22	2		III.	Transit	Egress	15	3	16	
III.	Transit	Egress	7	23	36		III.	Shadow	Ingress	15	4	13	
III.	Shadow	Ingress	8	0	13		III.	Shadow	Egress W.	15	7	53	
III.	Shadow	Egress	8	3	54		I.	Occult.	Disapp.	15	17	36	
I.	Occult.	Disapp.	8	15	46		I.	Eclipse	Reapp.	15	21	2	44.6

W.—Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

				d	h	m	s					d	h	m	s
II.	Occult.	Disapp.		16	2	5		II.	Eclipse	Reapp.	W.	23	9	51	28.2
II.	Eclipse	Roapp.	W.	16	7	15	21.8	I.	Transit	Ingress		23	16	48	
I.	Transit	Ingress		16	14	56		I.	Shadow	Ingress		23	18	1	
I.	Shadow	Ingress		16	16	6		I.	Transit	Egress		23	19	8	
I.	Transit	Egress		16	17	16		I.	Shadow	Egress		23	20	20	
I.	Shadow	Egress		16	18	26		I.	Occult.	Disapp.		24	13	56	
I.	Occult.	Disapp.	W.	17	12	4		I.	Eclipse	Reapp.		24	17	26	22.7
I.	Eclipse	Reapp.		17	15	31	26.3	II.	Transit	Ingress		24	22	41	
II.	Transit	Ingress		17	20	12		II.	Shadow	Ingress		25	1	10	
II.	Shadow	Ingress		17	22	34		II.	Transit	Egress		25	1	35	
II.	Transit	Egress		17	23	5		II.	Shadow	Egress		25	4	2	
II.	Shadow	Egress		18	1	26		I.	Transit	Ingress	W.	25	11	16	
I.	Transit	Ingress	W.	18	9	24		I.	Shadow	Ingress	W.	25	12	30	
I.	Shadow	Ingress	W.	18	10	35		I.	Transit	Egress		25	13	36	
I.	Transit	Egress	W.	18	11	44		I.	Shadow	Egress		25	14	49	
I.	Shadow	Egress	W.	18	12	55		III.	Occult.	Disapp.		25	17	17	
III.	Occult.	Disapp.	W.	18	13	30		III.	Occult.	Reapp.		25	20	59	
III.	Occult.	Reapp.		18	17	12		III.	Eclipse	Disapp.		25	22	20	18.7
III.	Eclipse	Disapp.		18	18	20	56.7	III.	Eclipse	Reapp.		26	1	59	22.9
III.	Eclipse	Reapp.		18	21	51	20.3	I.	Occult.	Disapp.	W.	26	8	24	
I.	Occult.	Disapp.		19	6	32		I.	Eclipse	Reapp.	W.	26	11	55	8.8
I.	Eclipse	Reapp.	W.	19	10	0	11.3	II.	Occult.	Disapp.		26	17	51	
II.	Occult.	Disapp.		19	15	20		II.	Eclipse	Reapp.		26	23	9	17.3
II.	Eclipse	Reapp.		19	20	33	12.3	I.	Transit	Ingress		27	5	45	
IV.	Occult.	Disapp.		20	1	40		I.	Shadow	Ingress		27	6	59	
I.	Transit	Ingress		20	3	52		I.	Transit	Egress	W.	27	8	5	
I.	Shadow	Ingress		20	5	3		I.	Shadow	Egress	W.	27	9	18	
I.	Transit	Egress		20	6	12		I.	Occult.	Disapp.	W.	28	2	58	
IV.	Occult.	Reapp.		20	6	32		I.	Eclipse	Reapp.		28	6	23	51.2
I.	Shadow	Egress	W.	20	7	23		IV.	Transit	Ingress	W.	28	8	40	
IV.	Eclipse	Disapp.	W.	20	13	9	17.0	II.	Transit	Ingress	W.	28	11	57	
IV.	Eclipse	Reapp.		20	17	41	24.8	IV.	Transit	Egress	W.	28	13	32	
I.	Occult.	Disapp.		21	1	0		II.	Shadow	Ingress		28	14	28	
I.	Eclipse	Reapp.		21	4	28	52.6	II.	Transit	Egress		28	14	51	
II.	Transit	Ingress	W.	21	9	26		II.	Shadow	Egress		28	17	20	
II.	Shadow	Ingress	W.	21	11	52		IV.	Shadow	Ingress		28	20	27	
II.	Transit	Egress	W.	21	12	20		I.	Transit	Ingress		29	0	13	
II.	Shadow	Egress		21	14	44		IV.	Shadow	Egress		29	1	9	
I.	Transit	Ingress		21	22	20		I.	Shadow	Ingress		29	1	27	
I.	Shadow	Ingress		21	23	32		I.	Transit	Egress		29	2	33	
I.	Transit	Egress		22	0	40		I.	Shadow	Egress		29	3	46	
I.	Shadow	Egress		22	1	51		III.	Transit	Ingress		29	7	8	
III.	Transit	Ingress		22	3	18		III.	Transit	Egress	W.	29	10	50	
III.	Transit	Egress		22	7	0		III.	Shadow	Ingress	W.	29	12	11	
III.	Shadow	Ingress	W.	22	8	12		III.	Shadow	Egress		29	15	51	
III.	Shadow	Egress	W.	22	11	52		I.	Occult.	Disapp.		29	21	20	
I.	Occult.	Disapp.		22	19	28		I.	Eclipse	Reapp.		30	0	52	39.7
I.	Eclipse	Reapp.		22	22	57	40.0	II.	Occult.	Disapp.		30	7	7	
II.	Occult.	Disapp		23	4	35		II.	Eclipse	Reapp.	W.	30	12	27	27.1

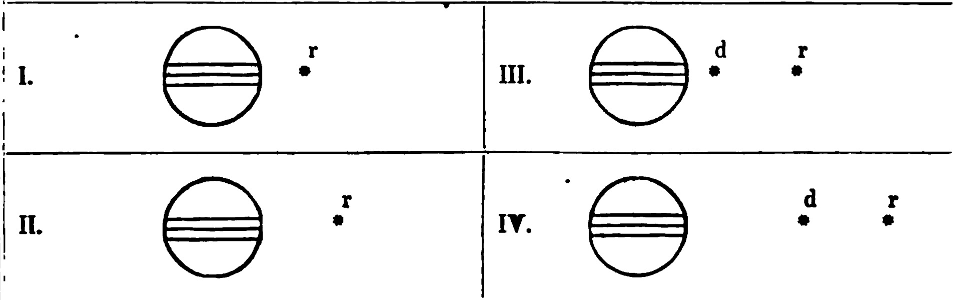
W.—Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress	30	18	41		I.	Transit	Egress	30	21	1	
I.	Shadow	Ingress	30	19	56		I.	Shadow	Egress	30	22	15	

Phases of the Eclipses of the Satellites for an Inverting Telescope.



MAY.

			d	h	m	s				d	h	m	s
I.	Occult.	Disapp.	1	15	48		I.	Transit	Egress	6	4	26	
I.	Eclipse	Reapp.	1	19	21	23.2	I.	Shadow	Egress	6	5	42	
II.	Transit	Ingress	2	1	14		III.	Transit	Ingress W.	6	11	1	
II.	Shadow	Ingress	2	3	46		III.	Transit	Egress	6	14	43	
II.	Transit	Egress	2	4	8		III.	Shadow	Ingress	6	16	10	
II.	Shadow	Egress	2	6	38		IV.	Occult.	Disapp.	6	18	55	
I.	Transit	Ingress W.	2	13	9		III.	Shadow	Egress	6	19	49	
I.	Shadow	Ingress	2	14	25		I.	Occult.	Disapp.	6	23	14	
I.	Transit	Egress	2	15	29		IV.	Occult.	Reapp.	6	23	46	
I.	Shadow	Egress	2	16	44		I.	Eclipse	Reapp.	7	2	47	42.1
III.	Occult.	Disapp	2	21	8		IV.	Eclipse	Disapp.	7	7	11	54.4
III.	Occult.	Reapp.	3	0	50		II.	Occult.	Disapp. W.	7	9	40	
III.	Eclipse	Disapp.	3	2	20	21.3	IV.	Eclipse	Reapp. W.	7	11	40	58.2
III.	Eclipse	Reapp.	3	5	50	5.3	II.	Eclipse	Reapp.	7	15	3	17.0
I.	Occult	Disapp. W.	3	10	17		I.	Transit	Ingress	7	20	34	
I.	Eclipse	Reapp.	3	13	50	10.1	I.	Shadow	Ingress	7	21	51	
II.	Occult.	Disapp.	3	20	23		I.	Transit	Egress	7	22	54	
II.	Eclipse	Reapp.	4	1	45	13.7	I.	Shadow	Egress	8	0	10	
I.	Transit	Ingress	4	7	37		I.	Occult.	Disapp.	8	17	42	
I.	Shadow	Ingress W.	4	8	54		I.	Eclipse	Reapp.	8	21	16	26.1
I.	Transit	Egress W.	4	9	57		II.	Transit	Ingress	9	3	49	
I.	Shadow	Egress W.	4	11	13		II.	Shadow	Ingress	9	6	23	
I.	Occult.	Disapp.	5	4	46		II.	Transit	Egress	9	6	43	
I.	Eclipse	Reapp. W.	5	8	18	52.9	II.	Shadow	Egress W.	9	9	14	
II.	Transit	Ingress	5	14	31		I.	Transit	Ingress	9	15	3	
II.	Shadow	Ingress	5	17	5		I.	Shadow	Ingress	9	16	20	
II.	Transit	Egress	5	17	25		I.	Transit	Egress	9	17	23	
II.	Shadow	Egress	5	19	56		I.	Shadow	Egress	9	18	39	
I.	Transit	Ingress	6	2	6		III.	Occult.	Disapp.	10	1	4	
I.	Shadow	Ingress	6	3	23		III.	Occult.	Reapp.	10	4	46	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

			d	h	m	s				d	h	m	s
III.	Eclipse	Disapp.	10	6	19	56.1	III.	Eclipse	Reapp.	17	13	48	44.3
III.	Eclipse	Reapp. W.	10	9	49	18.9	I.	Occult.	Disapp.	17	14	7	
I.	Occult.	Disapp. W.	10	12	11		I.	Eclipse	Reapp.	17	17	40	19.9
I.	Eclipse	Reapp.	10	15	45	13.8	II.	Occult.	Disapp.	18	1	35	
II.	Occult.	Disapp.	10	22	58		II.	Eclipse	Reapp.	18	6	56	16.8
II.	Eclipse	Reapp.	11	4	21	1.0	I.	Transit	Ingress W.	18	11	27	
I.	Transit	Ingress W.	11	9	32		I.	Shadow	Ingress	18	12	44	
I.	Shadow	Ingress W.	11	10	49		I.	Transit	Egress	18	13	47	
I.	Transit	Egress W.	11	11	52		I.	Shadow	Egress	18	15	3	
I.	Shadow	Egress	11	13	8		I.	Occult.	Disapp. W.	19	8	36	
I.	Occult.	Disapp.	12	6	40		I.	Eclipse	Reapp.	19	12	9	3.3
I.	Eclipse	Reapp. W.	12	10	13	57.2	II.	Transit	Ingress	19	19	45	
II.	Transit	Ingress	12	17	7		II.	Shadow	Ingress	19	22	18	
II.	Shadow	Ingress	12	19	41		II.	Transit	Egress	19	22	39	
II.	Transit	Egress	12	20	1		II.	Shadow	Egress	20	1	9	
II.	Shadow	Egress	12	22	32		I.	Transit	Ingress	20	5	56	
I.	Transit	Ingress	13	4	1		I.	Shadow	Ingress	20	7	12	
I.	Shadow	Ingress	13	5	18		I.	Transit	Egress W.	20	8	16	
I.	Transit	Egress	13	6	21		I.	Shadow	Egress W.	20	9	31	
I.	Shadow	Egress	13	7	37		III.	Transit	Ingress	20	19	0	
III.	Transit	Ingress	13	14	58		III.	Transit	Egress	20	22	42	
III.	Transit	Egress	13	18	40		III.	Shadow	Ingress	21	0	9	
III.	Shadow	Ingress	13	20	10		I.	Occult.	Disapp.	21	3	5	
III.	Shadow	Egress	13	23	48		III.	Shadow	Egress	21	3	47	
I.	Occult.	Disapp.	14	1	9		I.	Eclipse	Reapp.	21	6	37	53.6
I.	Eclipse	Reapp.	14	4	42	46.9	II.	Occult.	Disapp.	21	14	54	
II.	Occult.	Disapp. W.	14	12	16		II.	Eclipse	Reapp.	21	20	14	28.8
II.	Eclipse	Reapp.	14	17	38	57.5	I.	Transit	Ingress	22	0	25	
I.	Transit	Ingress	14	22	30		I.	Shadow	Ingress	22	1	41	
I.	Shadow	Ingress	14	23	47		I.	Transit	Egress	22	2	45	
I.	Transit	Egress	15	0	50		I.	Shadow	Egress	22	4	0	
I.	Shadow	Egress	15	2	6		I.	Occult.	Disapp.	22	21	34	
IV.	Transit	Ingress	15	2	20		I.	Eclipse	Reapp.	23	1	6	38.5
IV.	Transit	Egress	15	7	12		II.	Transit	Ingress W.	23	9	4	
IV.	Shadow	Ingress	15	14	30		II.	Shadow	Ingress W.	23	11	36	
IV.	Shadow	Egress	15	19	8		II.	Transit	Egress W.	23	11	58	
I.	Occult.	Disapp.	15	19	38		IV.	Occult.	Disapp.	23	13	2	
I.	Eclipse	Reapp.	15	23	11	31.4	II.	Shadow	Egress	23	14	27	
II.	Transit	Ingress	16	6	26		IV.	Occult.	Reapp.	23	17	53	
II.	Shadow	Ingress W.	16	8	59		I.	Transit	Ingress	23	18	54	
II.	Transit	Egress W.	16	9	20		I.	Shadow	Ingress	23	20	10	
II.	Shadow	Egress W.	16	11	50		I.	Transit	Egress	23	21	14	
I.	Transit	Ingress	16	16	58		I.	Shadow	Egress	23	22	29	
I.	Shadow	Ingress	16	18	15		IV.	Eclipse	Disapp.	24	1	14	35.2
I.	Transit	Egress	16	19	18		IV.	Eclipse	Reapp.	24	5	40	15.4
I:	Shadow	Egress	16	20	34		III.	Occult.	Disapp. W.	24	9	7	
III.	Occult.	Disapp.	17	5	4		III.	Occult.	Reapp.	24	12	49	
III.	Occult.	Reapp. W.	17	8	46		III.	Eclipse	Disapp.	24	14	19	0.4
III.	Eclipse	Disapp. W.	17	10	19	43.7	I.	Occult.	Disapp.	24	16	3	

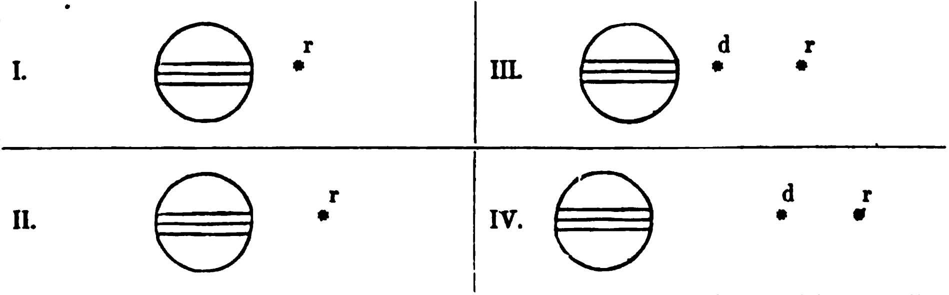
W.—Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

			d	h	m	s
III.	Eclipse	Reapp.	24	17	47	38.8
I.	Eclipse	Reapp.	24	19	35	27.5
II.	Occult.	Disapp.	25	4	13	
II.	Eclipse	Reapp. W.	25	9	32	6.8
I.	Transit	Ingress	25	13	23	
I.	Shadow	Ingress	25	14	38	
I.	Transit	Egress	25	15	43	
I.	Shadow	Egress	25	16	57	
I.	Occult.	Disapp. W.	26	10	32	
I.	Eclipse	Reapp.	26	14	4	10.9
II.	Transit	Ingress	26	22	24	
II.	Shadow	Ingress	27	0	54	
II.	Transit	Egress	27	1	18	
II.	Shadow	Egress	27	3	45	
I.	Transit	Ingress	27	7	52	
I.	Shadow	Ingress W.	27	9	7	
I.	Transit	Egress W.	27	10	12	
I.	Shadow	Egress W.	27	11	26	
III.	Transit	Ingress	27	23	5	
III.	Transit	Egress	28	2	47	
III.	Shadow	Ingress	28	4	9	
I.	Occult.	Disapp.	28	5	1	
III.	Shadow	Egress	28	7	47	
I.	Eclipse	Reapp. W.	28	8	33	1.2
II.	Occult.	Disapp.	28	17	32	
II.	Eclipse	Reapp.	28	22	49	50.7
I.	Transit	Ingress	29	2	21	
I.	Shadow	Ingress	29	3	36	
I.	Transit	Egress	29	4	41	
I.	Shadow	Egress	29	5	55	
I.	Occult.	Disapp.	29	23	30	
I.	Eclipse	Reapp.	30	3	1	46.0
II.	Transit	Ingress	30	11	44	
II.	Shadow	Ingress	30	14	13	
II.	Transit	Egress	30	14	38	
II.	Shadow	Egress	30	17	4	
I.	Transit	Ingress	30	20	50	
I.	Shadow	Ingress	30	22	5	
I.	Transit	Egress	30	23	10	
I.	Shadow	Egress	31	0	24	
III.	Occult.	Disapp.	31	13	14	
III.	Occult.	Reapp.	31	16	56	
I.	Occult.	Disapp.	31	18	0	
III.	Eclipse	Disapp.	31	18	18	12.6
IV.	Transit	Ingress	31	20	49	
I.	Eclipse	Reapp.	31	21	30	34.9
III.	Eclipse	Reapp.	31	21	46	26.2

Phases of the Eclipses of the Satellites for an Inverting Telescope.



JUNE.

			d	h	m	s
IV.	Transit	Egress	1	1	40	
II.	Occult.	Disapp.	1	6	52	
IV.	Shadow	Ingress W.	1	8	31	
II.	Eclipse	Reapp.	1	12	7	24.9
IV.	Shadow	Egress	1	13	6	
I.	Transit	Ingress	1	15	20	
I.	Shadow	Ingress	1	16	34	
I.	Transit	Egress	1	17	40	
I.	Shadow	Egress	1	18	53	
I.	Occult.	Disapp.	2	12	29	
I.	Eclipse	Reapp.	2	15	50	18.2
II.	Transit	Ingress	3	1	5	
II.	Shadow	Ingress	3	3	32	
II.	Transit	Egress	3	3	59	
II.	Shadow	Egress	3	6	22	
I.	Transit	Ingress W.	3	9	49	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

JUNE.

			d	h	m	s
I.	Shadow	Ingress W.	3	11	2	
I.	Transit	Egress	3	12	9	
I.	Shadow	Egress	3	13	21	
III.	Transit	Ingress	4	3	13	
III.	Transit	Egress	4	6	55	
I.	Occult.	Disapp.	4	6	58	
III.	Shadow	Ingress W.	4	8	8	
I.	Eclipse	Reapp. W.	4	10	28	8.6
III.	Shadow	Egress	4	11	46	
II.	Occult.	Disapp.	4	20	12	
II.	Eclipse	Reapp.	5	1	25	1.9
I.	Transit	Ingress	5	4	18	
I.	Shadow	Ingress	5	5	31	
I.	Transit	Egress	5	6	38	
I.	Shadow	Egress	5	7	50	
I.	Occult.	Disapp.	6	1	27	
I.	Eclipse	Reapp.	6	4	56	53.4
II.	Transit	Ingress	6	14	26	
II.	Shadow	Ingress	6	16	50	
II.	Transit	Egress	6	17	20	
II.	Shadow	Egress	6	19	40	
I	Transit	Ingress	6	22	47	
I.	Shadow	Ingress	7	0	0	
I.	Transit	Egress	7	1	7	
I.	Shadow	Egress	7	2	19	
III.	Occult.	Disapp.	7	17	24	
I.	Occult.	Disapp.	7	19	57	
III.	Occult.	Reapp.	7	21	5	
III.	Eclipse	Disapp.	7	22	17	37.0
I.	Eclipse	Reapp.	7	23	25	42.4
III.	Eclipse	Reapp.	8	1	45	25.8
II.	Occult.	Disapp. W.	8	9	33	
II.	Eclipse	Reapp.	8	14	42	31.4
I.	Transit	Ingress	8	17	17	
I.	Shadow	Ingress	8	18	29	
I.	Transit	Egress	8	19	37	
I.	Shadow	Egress	8	20	48	
IV.	Occult.	Disapp.	9	7	54	
IV.	Occult.	Reapp.	9	12	45	
I.	Occult.	Disapp.	9	14	27	
I.	Eclipse	Reapp.	9	17	54	25.6
IV.	Eclipse	Disapp.	9	19	17	33.7
IV.	Eclipse	Reapp.	9	23	39	35.3
II.	Transit	Ingress	10	3	48	
II.	Shadow	Ingress	10	6	8	
II.	Transit	Egress	10	6	41	
II.	Shadow	Egress W.	10	8	58	
I.	Transit	Ingress	10	11	47	
I.	Shadow	Ingress	10	12	58	
I.	Transit	Egress	10	14	7	
I.	Shadow	Egress	10	15	17	
III.	Transit	Ingress	11	7	25	
I.	Occult.	Disapp. W.	11	8	56	
III.	Transit	Egress	11	11	7	
III.	Shadow	Ingress	11	12	8	
I.	Eclipse	Reapp.	11	12	23	15.9
III.	Shadow	Egress	11	15	46	
II.	Occult.	Disapp.	11	22	54	
II.	Eclipse	Reapp.	12	4	0	2.4
I.	Transit	Ingress	12	6	16	
I.	Shadow	Ingress	12	7	26	
I.	Transit	Egress W.	12	8	36	
I.	Shadow	Egress W.	12	9	45	
I.	Occult.	Disapp.	13	3	26	
I.	Eclipse	Reapp.	13	6	52	0.4
II.	Transit	Ingress	13	17	10	
II.	Shadow	Ingress	13	19	27	
II.	Transit	Egress	13	20	3	
II.	Shadow	Egress	13	22	17	
I.	Transit	Ingress	14	0	46	
I.	Shadow	Ingress	14	1	55	
I.	Transit	Egress	14	3	6	
I.	Shadow	Egress	14	4	14	
III.	Occult.	Disapp.	14	21	37	
I.	Occult.	Disapp.	14	21	55	
III.	Occult.	Reapp.	15	1	18	
I.	Eclipse	Reapp.	15	1	20	49.4
III.	Eclipse	Disapp.	15	2	17	5.7
III.	Eclipse	Reapp.	15	5	44	28.7
II.	Occult.	Disapp.	15	12	15	
II.	Eclipse	Reapp.	15	17	17	28.0
I.	Transit	Ingress	15	19	15	
I.	Shadow	Ingress	15	20	23	
I.	Transit	Egress	15	21	35	
I.	Shadow	Egress	15	22	42	
I.	Occult.	Disapp.	16	16	25	
I.	Eclipse	Reapp.	16	19	49	32.1
II.	Transit	Ingress	17	6	33	
II.	Shadow	Ingress W.	17	8	46	
II.	Transit	Egress W.	17	9	26	
II.	Shadow	Egress	17	11	36	
I.	Transit	Ingress	17	13	45	
I.	Shadow	Ingress	17	14	52	
IV.	Transit	Ingress	17	15	58	
I.	Transit	Egress	17	16	5	
I.	Shadow	Egress	17	17	11	
IV.	Transit	Egress	17	20	48	
IV.	Shadow	Ingress	18	2	32	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

JUNE.

			d	h	m	s
IV.	Shadow	Egress	18	7	4	
I.	Occult.	Disapp.	18	10	55	
III.	Transit	Ingress	18	11	39	
I.	Eclipse	Reapp.	18	14	18	22.2
III.	Transit	Egress	18	15	20	
III.	Shadow	Ingress	18	16	7	
III.	Shadow	Egress	18	19	44	
II.	Occult.	Disapp.	19	1	36	
II.	Eclipse	Reapp.	19	6	34	53.3
I.	Transit	Ingress W.	19	8	15	
I.	Shadow	Ingress W.	19	9	21	
I.	Transit	Egress	19	10	35	
I.	Shadow	Egress	19	11	40	
I.	Occult.	Disapp.	20	5	25	
I.	Eclipse	Reapp. W.	20	8	47	6.2
II.	Transit	Ingress	20	19	56	
II.	Shadow	Ingress	20	22	4	
II.	Transit	Egress	20	22	49	
II.	Shadow	Egress	21	0	54	
I.	Transit	Ingress	21	2	45	
I.	Shadow	Ingress	21	3	49	
I.	Transit	Egress	21	5	5	
I.	Shadow	Egress	21	6	8	
I.	Occult.	Disapp.	21	23	55	
III.	Occult.	Disapp.	22	1	53	
I.	Eclipse	Reapp.	22	3	15	54.9
III.	Occult.	Reapp.	22	5	34	
III.	Eclipse	Disapp.	22	6	17	10.6
III.	Eclipse	Reapp. W.	22	9	44	7.0
II.	Occult.	Disapp.	22	14	58	
II.	Eclipse	Reapp.	22	19	52	14.9
I.	Transit	Ingress	22	21	14	
I.	Shadow	Ingress	22	22	18	
I.	Transit	Egress	22	23	34	
I.	Shadow	Egress	23	0	37	
I.	Occult.	Disapp.	23	18	25	
I.	Eclipse	Reapp.	23	21	44	37.2
II.	Transit	Ingress W.	24	9	19	
II.	Shadow	Ingress	24	11	23	
II.	Transit	Egress	24	12	12	
II.	Shadow	Egress	24	14	13	
I.	Transit	Ingress	24	15	44	
I.	Shadow	Ingress	24	16	46	
I.	Transit	Egress	24	18	4	
I.	Shadow	Egress	24	19	5	
I.	Occult.	Disapp.	25	12	55	
III.	Transit	Ingress	25	15	55	
I.	Eclipse	Reapp.	25	16	13	26.6
III.	Transit	Egress	25	19	36	
III.	Shadow	Ingress	25	20	6	
III.	Shadow	Egress	25	23	42	
IV.	Occult.	Disapp.	26	3	23	
II.	Occult.	Disapp.	26	4	20	
IV.	Occult.	Reapp.	26	8	12	
II.	Eclipse	Reapp. W.	26	9	9	14.9
I.	Transit	Ingress	26	10	14	
I.	Shadow	Ingress	26	11	15	
I.	Transit	Egress	26	12	34	
IV.	Eclipse	Disapp.	26	13	19	54.2
I.	Shadow	Egress	26	13	34	
IV.	Eclipse	Reapp.	26	17	37	57.0
I.	Occult.	Disapp.	27	7	25	
I.	Eclipse	Reapp.	27	10	42	10.3
II.	Transit	Ingress	27	22	42	
II.	Shadow	Ingress	28	0	41	
II.	Transit	Egress	28	1	35	
II.	Shadow	Egress	28	3	31	
I.	Transit	Ingress	28	4	44	
I.	Shadow	Ingress	28	5	44	
I.	Transit	Egress	28	7	4	
I.	Shadow	Egress	28	8	3	
I.	Occult.	Disapp.	29	1	55	
I.	Eclipse	Reapp.	29	5	10	58.7
III.	Occult.	Disapp.	29	6	11	
III.	Occult.	Reapp. W.	29	9	52	
III.	Eclipse	Disapp.	29	10	16	42.0
III.	Eclipse	Reapp.	29	13	43	11.0
II.	Occult.	Disapp	29	17	42	
II.	Eclipse	Reapp.	29	22	26	52.2
I.	Transit	Ingress	29	23	14	
I.	Shadow	Ingress	30	0	12	
I.	Transit	Egress	30	1	34	
I.	Shadow	Egress	30	2	31	
I.	Occult.	Disapp.	30	20	25	
I.	Eclipse	Reapp.	30	23	39	40.4

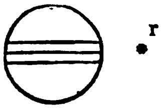
W.—Visible at Washington.

WASHINGTON MEAN TIME.

JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



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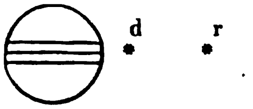

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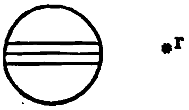

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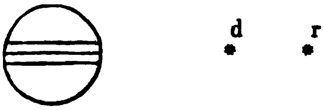


JULY.

			d	h	m	s
II.	Transit	Ingress	1	12	5	
II.	Shadow	Ingress	1	14	0	
II.	Transit	Egress	1	14	58	
II.	Shadow	Egress	1	16	50	
I.	Transit	Ingress	1	17	43	
I.	Shadow	Ingress	1	18	41	
I.	Transit	Egress	1	20	3	
I.	Shadow	Egress	1	21	0	
I.	Occult.	Disapp.	2	14	55	
I.	Eclipse	Reapp.	2	18	8	29.1
III.	Transit	Ingress	2	20	13	
III.	Transit	Egress	2	23	54	
III.	Shadow	Ingress	3	0	5	
III.	Shadow	Egress	3	3	41	
II.	Occult.	Disapp.	3	7	4	
II.	Eclipse	Reapp.	3	11	44	6.3
I.	Transit	Ingress	3	12	13	
I	Shadow	Ingress	3	13	9	
I.	Transit	Egress	3	14	33	
I.	Shadow	Egress	3	15	28	
I.	Occult.	Disapp. W.	4	9	25	
IV.	Transit	Ingress	4	11	41	
I.	Eclipse	Reapp.	4	12	37	12.0
IV.	Transit	Egress	4	16	28	
IV.	Shadow	Ingress	4	20	34	
IV.	Shadow	Egress	5	1	2	
II.	Transit	Ingress	5	1	28	
II.	Shadow	Ingress	5	3	18	
II.	Transit	Egress	5	4	21	
II.	Shadow	Egress	5	6	8	
I.	Transit	Ingress	5	6	43	
I.	Shadow	Ingress	5	7	38	
I.	Transit	Egress W.	5	9	3	
I.	Shadow	Egress	5	9	57	
I.	Occult.	Disapp.	6	3	55	
I.	Eclipse	Reapp.	6	7	5	59.8
III.	Occult.	Disapp.	6	10	31	
III.	Occult.	Reapp.	6	14	12	
III.	Eclipse	Disapp.	6	14	16	20.7
III.	Eclipse	Reapp.	6	17	42	21.5
II.	Occult.	Disapp.	6	20	27	
II.	Eclipse	Reapp.	7	1	1	19.1
I.	Transit	Ingress	7	1	13	
I.	Shadow	Ingress	7	2	7	
I.	Transit	Egress	7	3	33	
I.	Shadow	Egress	7	4	26	
I.	Occult.	Disapp.	7	22	25	
I.	Eclipse	Reapp.	8	1	34	40.4
II.	Transit	Ingress	8	14	52	
II.	Shadow	Ingress	8	16	37	
II.	Transit	Egress	8	17	45	
II.	Shadow	Egress	8	19	27	
I.	Transit	Ingress	8	19	43	
I.	Shadow	Ingress	8	20	35	
I.	Transit	Egress	8	22	3	
I.	Shadow	Egress	8	22	54	
I.	Occult.	Disapp.	9	16	55	
I.	Eclipse	Reapp.	9	20	3	28.7
III.	Transit	Ingress	10	0	33	
III.	Shadow	Ingress	10	4	3	
III.	Transit	Egress	10	4	14	
III.	Shadow	Egress	10	7	39	
II.	Occult.	Disapp.	10	9	50	
I.	Transit	Ingress	10	14	13	
II.	Eclipse	Reapp.	10	14	18	28.3
I.	Shadow	Ingress	10	15	4	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

JULY.

			d	h	m	s
I.	Transit	Egress	10	16	33	
I.	Shadow	Egress	10	17	23	
I.	Occult.	Disapp.	11	11	25	
I.	Eclipse	Reapp.	11	14	32	10.8
II.	Transit	Ingress	12	4	16	
II.	Shadow	Ingress	12	5	56	
II.	Transit	Egress	12	7	9	
I.	Transit	Ingress W.	12	8	43	
II.	Shadow	Egress W.	12	8	45	
I.	Shadow	Ingress	12	9	32	
I.	Transit	Egress	12	11	3	
I.	Shadow	Egress	12	11	51	
IV.	Occult.	Disapp.	12	23	20	
IV.	Occult.	Reapp.	13	4	7	
I.	Occult.	Disapp.	13	5	55	
IV.	Eclipse	Disapp.	13	7	22	3.8
I.	Eclipse	Reapp.	13	9	0	57.8
IV.	Eclipse	Reapp.	13	11	35	49.0
III.	Occult.	Disapp.	13	14	52	
III.	Eclipse	Reapp.	13	21	40	57.9
II.	Occult.	Disapp.	13	23	13	
I.	Transit	Ingress	14	3	13	
II.	Eclipse	Reapp.	14	3	35	37.1
I.	Shadow	Ingress	14	4	1	
I.	Transit	Egress	14	5	33	
I.	Shadow	Egress	14	6	20	
I.	Occult.	Disapp.	15	0	25	
I.	Eclipse	Reapp.	15	3	29	37.6
II.	Transit	Ingress	15	17	41	
II.	Shadow	Ingress	15	19	15	
II.	Transit	Egress	15	20	34	
I.	Transit	Ingress	15	21	43	
II.	Shadow	Egress	15	22	4	
I.	Shadow	Ingress	15	22	30	
I.	Transit	Egress	16	0	3	
I.	Shadow	Egress	16	0	49	
I.	Occult.	Disapp.	16	18	55	
I.	Eclipse	Reapp.	16	21	58	25.0
III.	Transit	Ingress	17	4	56	
III.	Shadow	Ingress	17	8	3	
III.	Transit	Egress W.	17	8	36	
III.	Shadow	Egress	17	11	38	
II.	Occult.	Disapp.	17	12	36	
I.	Transit	Ingress	17	16	13	
II.	Eclipse	Reapp.	17	16	52	41.9
I.	Shadow	Ingress	17	16	58	
I.	Transit	Egress	17	18	33	
I.	Shadow	Egress	17	19	17	
I.	Occult.	Disapp.	18	13	25	
I.	Eclipse	Reapp.	18	16	27	7.3
II.	Transit	Ingress	19	7	6	
II.	Shadow	Ingress W.	19	8	33	
II.	Transit	Egress	19	9	59	
I.	Transit	Ingress	19	10	43	
II.	Shadow	Egress	19	11	22	
I.	Shadow	Ingress	19	11	27	
I.	Transit	Egress	19	13	3	
I.	Shadow	Egress	19	13	46	
I.	Occult.	Disapp.	20	7	56	
I.	Eclipse	Reapp.	20	10	55	52.4
III.	Occult.	Disapp.	20	19	15	
III.	Eclipse	Reapp.	21	1	39	25.6
II.	Occult.	Disapp.	21	1	59	
I.	Transit	Ingress	21	5	13	
I.	Shadow	Ingress	21	5	55	
II.	Eclipse	Reapp.	21	6	9	47.0
I.	Transit	Egress	21	7	33	
IV.	Transit	Ingress	21	7	47	
I.	Shadow	Egress W.	21	8	14	
IV.	Transit	Egress	21	12	30	
IV.	Shadow	Ingress	21	14	34	
IV.	Shadow	Egress	21	18	59	
I.	Occult.	Disapp.	22	2	26	
I.	Eclipse	Reapp.	22	5	24	31.4
II.	Transit	Ingress	22	20	30	
II.	Shadow	Ingress	22	21	51	
II.	Transit	Egress	22	23	23	
I.	Transit	Ingress	22	23	43	
I.	Shadow	Ingress	23	0	24	
II.	Shadow	Egress	23	0	40	
I.	Transit	Egress	23	2	3	
I.	Shadow	Egress	23	2	43	
I.	Occult.	Disapp.	23	20	56	
I.	Eclipse	Reapp.	23	23	53	17.8
III.	Transit	Ingress	24	9	19	
III.	Shadow	Ingress	24	12	2	
III.	Transit	Egress	24	12	59	
II.	Occult.	Disapp.	24	15	22	
III.	Shadow	Egress	24	15	36	
I	Transit	Ingress	24	18	13	
I.	Shadow	Ingress	24	18	53	
II.	Eclipse	Reapp.	24	19	26	48.8
I.	Transit	Egress	24	20	33	
I.	Shadow	Egress	24	21	12	
I.	Occult.	Disapp.	25	15	27	
I.	Eclipse	Reapp.	25	18	21	58.4
II.	Transit	Ingress	26	9	55	
II.	Shadow	Ingress	26	11	10	

W.—Visible at Washington.

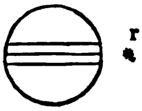
WASHINGTON MEAN TIME.

JULY.

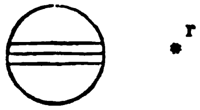
			d	h	m	s				d	h	m	s
I.	Transit	Ingress	26	12	43		II.	Shadow	Ingress	30	0	29	
II.	Transit	Egress	26	12	47		IV.	Eclipse	Disapp.	30	1	24	10.1
I.	Shadow	Ingress	26	13	21		I.	Transit	Ingress	30	1	44	
II.	Shadow	Egress	26	13	59		II.	Transit	Egress	30	2	12	
I.	Transit	Egress	26	15	3		I.	Shadow	Ingress	30	2	18	
I.	Shadow	Egress	26	15	40		II.	Shadow	Egress	30	3	18	
I.	Occult.	Disapp.	27	9	57		I.	Transit	Egress	30	4	4	
I.	Eclipse	Reapp.	27	12	50	43.7	I.	Shadow	Egress	30	4	37	
III.	Occult.	Disapp.	27	23	39		IV.	Eclipse	Reapp.	30	5	33	20.1
II.	Occult.	Disapp.	28	4	46		I.	Occult.	Disapp.	30	22	58	
III.	Eclipse	Reapp.	28	5	38	3.8	I.	Eclipse	Reapp.	31	1	48	7.1
I.	Transit	Ingress	28	7	14		III.	Transit	Ingress	31	13	44	
I.	Shadow	Ingress	28	7	50		III.	Shadow	Ingress	31	16	1	
II.	Eclipse	Reapp.	28	8	43	49.3	III.	Transit	Egress	31	17	23	
I.	Transit	Egress	28	9	34		II.	Occult.	Disapp.	31	18	9	
I.	Shadow	Egress	28	10	9		III.	Shadow	Egress	31	19	34	
I.	Occult.	Disapp.	29	4	27		I.	Transit	Ingress	31	20	14	
I.	Eclipse	Reapp.	29	7	19	21.6	I.	Shadow	Ingress	31	20	47	
IV.	Occult.	Disapp.	29	19	40		II.	Eclipse	Reapp.	31	22	0	46.0
II.	Transit	Ingress	29	23	20		I.	Transit	Egress	31	22	34	
IV.	Occult.	Reapp.	30	0	24		I.	Shadow	Egress	31	23	6	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



III.



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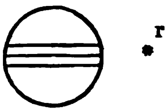

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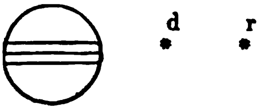


AUGUST.

			d	h	m	s				d	h	m	s
I.	Occult.	Disapp.	1	17	28		I.	Occult.	Disapp.	3	11	58	
I.	Eclipse	Reapp.	1	20	16	46.2	I.	Eclipse	Reapp.	3	14	45	30.8
II.	Transit	Ingress	2	12	44		III.	Occult.	Disapp.	4	4	5	
II.	Shadow	Ingress	2	13	47		II.	Occult.	Disapp.	4	7	33	
I.	Transit	Ingress	2	14	44		I.	Transit	Ingress	4	9	14	
I.	Shadow	Ingress	2	15	15		III.	Eclipse	Reapp.	4	9	36	40.8
II.	Transit	Egress	2	15	36		I.	Shadow	Ingress	4	9	44	
II.	Shadow	Egress	2	16	36		II.	Eclipse	Reapp.	4	11	17	42.6
I.	Transit	Egress	2	17	4		I.	Transit	Egress	4	11	34	
I.	Shadow	Egress	2	17	34		I.	Shadow	Egress	4	12	3	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

The Satellites are invisible from August 5th to October 3d, Jupiter being too near the Sun.

OCTOBER.

			d	h	m	s
III.	Shadow	Ingress	4	3	45	
III.	Transit	Ingress	4	5	45	
III.	Shadow	Egress	4	7	14	
III.	Transit	Egress	4	9	14	
I.	Eclipse	Disapp.	4	11	11	45.1
I.	Occult.	Reapp.	4	13	58	
IV.	Eclipse	Disapp.	5	1	27	17.0
IV.	Eclipse	Reapp.	5	5	14	44.0
IV.	Occult.	Disapp.	5	6	9	
I.	Shadow	Ingress	5	8	20	
I.	Transit	Ingress	5	8	50	
IV.	Occult.	Reapp.	5	10	13	
I.	Shadow	Egress	5	10	38	
I.	Transit	Egress	5	11	9	
II.	Shadow	Ingress	5	13	17	
II.	Transit	Ingress	5	14	18	
II.	Shadow	Egress	5	16	3	
II.	Transit	Egress W.	5	17	5	
I.	Eclipse	Disapp.	6	5	40	18.7
I.	Occult.	Reapp.	6	8	28	
I.	Shadow	Ingress	7	2	48	
I.	Transit	Ingress	7	3	20	
I.	Shadow	Egress	7	5	7	
I.	Transit	Egress	7	5	39	
II.	Eclipse	Disapp.	7	7	39	2.0
II.	Occult.	Reapp.	7	11	27	
III.	Eclipse	Disapp.	7	18	2	11.1
III.	Occult.	Reapp.	7	23	39	
I.	Eclipse	Disapp.	8	0	8	44.3
I.	Occult.	Reapp.	8	2	58	
I.	Shadow	Ingress	8	21	17	
I.	Transit	Ingress	8	21	50	
I.	Shadow	Egress	8	23	36	
I.	Transit	Egress	9	0	9	
II.	Shadow	Ingress	9	2	35	
II.	Transit	Ingress	9	3	42	
II.	Shadow	Egress	9	5	22	
II.	Transit	Egress	9	6	29	
I.	Eclipse	Disapp.	9	18	37	15.6
I.	Occult.	Reapp.	9	21	28	
I.	Shadow	Ingress	10	15	45	
I.	Transit	Ingress	10	16	20	
I.	Shadow	Egress	10	18	4	
I.	Transit	Egress	10	18	39	
II.	Eclipse	Disapp.	10	20	55	52.1
II.	Occult.	Reapp.	11	0	50	
III.	Shadow	Ingress	11	7	43	
III.	Transit	Ingress	11	10	9	
III.	Shadow	Egress	11	11	11	
I.	Eclipse	Disapp.	11	13	5	41.7
III.	Transit	Egress	11	13	37	
I.	Occult.	Reapp.	11	15	58	
I.	Shadow	Ingress	12	10	14	
I.	Transit	Ingress	12	10	50	
I.	Shadow	Egress	12	12	32	
I.	Transit	Egress	12	13	9	
II.	Shadow	Ingress	12	15	53	
II.	Transit	Ingress W.	12	17	7	
II.	Shadow	Egress	12	18	39	
II.	Transit	Egress	12	19	53	
I.	Eclipse	Disapp.	13	7	34	13.6
IV.	Shadow	Ingress	13	8	35	
I.	Occult.	Reapp.	13	10	28	
IV.	Shadow	Egress	13	12	33	
IV.	Transit	Ingress	13	14	36	
IV.	Transit	Egress	13	18	32	
I.	Shadow	Ingress	14	4	42	
I.	Transit	Ingress	14	5	20	
I.	Shadow	Egress	14	7	0	
I.	Transit	Egress	14	7	39	
II.	Eclipse	Disapp.	14	10	12	41.7
II.	Occult.	Reapp.	14	14	13	
III.	Eclipse	Disapp.	14	22	0	36.0
I.	Eclipse	Disapp.	15	2	2	37.8
III.	Occult.	Reapp.	15	4	2	
I.	Occult.	Reapp.	15	4	58	
I.	Shadow	Ingress	15	23	10	
I.	Transit	Ingress	15	23	50	
I.	Shadow	Egress	16	1	28	
I.	Transit	Egress	16	2	8	
II.	Shadow	Ingress	16	5	11	
II.	Transit	Ingress	16	6	31	
II.	Shadow	Egress	16	7	57	
II.	Transit	Egress	16	9	17	
I.	Eclipse	Disapp.	16	20	31	7.5
I.	Occult.	Reapp.	16	23	28	
I.	Shadow	Ingress W.	17	17	39	
I.	Transit	Ingress	17	18	20	
I.	Shadow	Egress	17	19	57	
I.	Transit	Egress	17	20	38	
II.	Eclipse	Disapp.	17	23	29	29.2
II.	Occult.	Reapp.	18	3	36	

W.—Visible at Washington.

WASHINGTON MEAN TIME.

OCTOBER.

			d	h	m	s				d	h	m	s
III.	Shadow	Ingress	18	11	41		III.	Shadow	Ingress	25	15	39	
III.	Transit	Ingress	18	14	33		I.	Eclipse	Disapp. W.	25	16	53	16.7
I.	Eclipse	Disapp.	18	14	59	32.3	III.	Transit	Ingress	25	18	56	
III.	Shadow	Egress	18	15	9		III.	Shadow	Egress	25	19	7	
I.	Occult.	Reapp. W.	18	17	58		I.	Occult.	Reapp.	25	19	58	
III.	Transit	Egress W.	18	18	0		III.	Transit	Egress	25	22	20	
I.	Shadow	Ingress	19	12	7		I.	Shadow	Ingress	26	14	1	
I.	Transit	Ingress	19	12	49		I.	Transit	Ingress	26	14	49	
I.	Shadow	Egress	19	14	25		I.	Shadow	Egress W.	26	16	19	
I.	Transit	Egress	19	15	7		I.	Transit	Egress W.	26	17	7	
II.	Shadow	Ingress	19	18	28		II.	Shadow	Ingress	26	21	4	
II.	Transit	Ingress	19	19	55		II.	Transit	Ingress	26	22	42	
II.	Shadow	Egress	19	21	14		II.	Shadow	Egress	26	23	49	
II.	Transit	Egress	19	22	40		II.	Transit	Egress	27	1	27	
I.	Eclipse	Disapp.	20	9	28	2.7	I.	Eclipse	Disapp.	27	11	21	45.7
I.	Occult.	Reapp.	20	12	28		I.	Occult.	Reapp.	27	14	27	
I.	Shadow	Ingress	21	6	36		I.	Shadow	Ingress	28	8	29	
I.	Transit	Ingress	21	7	19		I.	Transit	Ingress	28	9	18	
I.	Shadow	Egress	21	8	54		I.	Shadow	Egress	28	10	47	
I.	Transit	Egress	21	9	37		I.	Transit	Egress	28	11	36	
II.	Eclipse	Disapp.	21	12	46	20.0	II.	Eclipse	Disapp.	28	15	20	1.3
II.	Occult.	Reapp. W.	21	16	58		II.	Occult.	Reapp.	28	19	43	
IV.	Eclipse	Disapp.	21	19	27	2.0	I.	Eclipse	Disapp.	29	5	50	6.9
IV.	Eclipse	Reapp.	21	23	8	11.8	III.	Eclipse	Disapp.	29	5	56	11.0
III.	Eclipse	Disapp.	22	1	58	27.8	I.	Occult.	Reapp.	29	8	57	
IV.	Occult.	Disapp.	22	2	34		III.	Eclipse	Reapp.	29	9	12	39.9
I.	Eclipse	Disapp.	22	3	56	25.3	III.	Occult.	Disapp.	29	9	20	
IV.	Occult	Reapp.	22	6	21		III.	Occult.	Reapp.	29	12	43	
I.	Occult.	Reapp.	22	6	58		IV.	Shadow	Ingress	30	2	33	
III.	Occult.	Reapp.	22	8	24		I.	Shadow	Ingress	30	2	58	
I.	Shadow	Ingress	23	1	4		I.	Transit	Ingress	30	3	48	
I.	Transit	Ingress	23	1	49		I.	Shadow	Egress	30	5	16	
I.	Shadow	Egress	23	3	22		I.	Transit	Egress	30	6	6	
I.	Transit	Egress	23	4	7		IV.	Shadow	Egress	30	6	26	
II.	Shadow	Ingress	23	7	46		II.	Shadow	Ingress	30	10	22	
II.	Transit	Ingress	23	9	19		IV.	Transit	Ingress	30	10	50	
II.	Shadow	Egress	23	10	32		II.	Transit	Ingress	30	12	5	
II.	Transit	Egress	23	12	4		II.	Shadow	Egress	30	13	7	
I.	Eclipse	Disapp.	23	22	24	53.5	IV.	Transit	Egress	30	14	29	
I.	Occult.	Reapp.	24	1	28		II.	Transit	Egress	30	14	50	
I.	Shadow	Ingress	24	19	32		I.	Eclipse	Disapp.	31	0	18	33.6
I.	Transit	Ingress	24	20	19		I.	Occult.	Reapp.	31	3	27	
I.	Shadow	Egress	24	21	50		I.	Shadow	Ingress	31	21	26	
I.	Transit	Egress	24	22	37		I.	Transit	Ingress	31	22	18	
II.	Eclipse	Disapp.	25	2	3	7.8	I.	Shadow	Egress	31	23	44	
II.	Occult.	Reapp.	25	6	21								

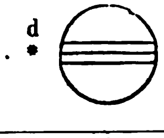
W.—Visible at Washington.

WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



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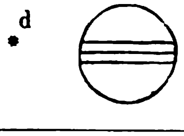

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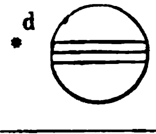

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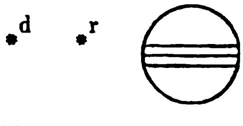


NOVEMBER.

			d	h	m	s
I.	Transit	Egress	1	0	36	
II.	Eclipse	Disapp.	1	4	36	49.4
II.	Occult.	Reapp.	1	9	5	
I.	Eclipse	Disapp.	1	18	46	55.6
III.	Shadow	Ingress	1	19	37	
I.	Occult.	Reapp.	1	21	57	
III.	Shadow	Egress	1	23	4	
III.	Transit	Ingress	1	23	16	
III.	Transit	Egress	2	2	39	
I.	Shadow	Ingress W.	2	15	54	
I.	Transit	Ingress W.	2	16	48	
I.	Shadow	Egress W.	2	18	12	
I.	Transit	Egress	2	19	6	
II.	Shadow	Ingress	2	23	39	
II.	Transit	Ingress	3	1	28	
II.	Shadow	Egress	3	2	24	
II.	Transit	Egress	3	4	12	
I.	Eclipse	Disapp.	3	13	15	22.5
I.	Occult.	Reapp. W.	3	16	26	
I	Shadow	Ingress	4	10	23	
I.	Transit	Ingress	4	11	17	
I.	Shadow	Egress	4	12	41	
I.	Transit	Egress	4	13	35	
II.	Eclipse	Disapp. W.	4	17	53	46.2
II.	Occult.	Reapp.	4	22	27	
I.	Eclipse	Disapp.	5	7	43	42.2
III.	Eclipse	Disapp.	5	9	54	6.9
I.	Occult.	Reapp.	5	10	56	
III.	Eclipse	Reapp.	5	13	9	53.1
III.	Occult.	Disapp.	5	13	39	
III.	Occult.	Reapp. W.	5	17	1	
I.	Shadow	Ingress	6	4	51	
I.	Transit	Ingress	6	5	47	
I.	Shadow	Egress	6	7	9	
I.	Transit	Egress	6	8	5	
II.	Shadow	Ingress	6	12	57	
II.	Transit	Ingress	6	14	51	
II.	Shadow	Egress W.	6	15	42	
II.	Transit	Egress W.	6	17	35	
I.	Eclipse	Disapp.	7	2	12	7.3
I.	Occult.	Reapp.	7	5	25	
IV.	Eclipse	Disapp.	7	13	26	43.3
IV.	Eclipse	Reapp. W.	7	17	1	12.7
IV.	Occult.	Disapp.	7	22	39	
I.	Shadow	Ingress	7	23	19	
I.	Transit	Ingress	8	0	16	
I.	Shadow	Egress	8	1	37	
IV.	Occult.	Reapp.	8	2	8	
I.	Transit	Egress	8	2	34	
II.	Eclipse	Disapp.	8	7	10	34.7
II.	Occult.	Reapp.	8	11	49	
I.	Eclipse	Disapp.	8	20	40	28.0
III.	Shadow	Ingress	8	23	35	
I.	Occult.	Reapp.	8	23	55	
III.	Shadow	Egress	9	3	1	
III.	Transit	Ingress	9	3	35	
III.	Transit	Egress	9	6	55	
I.	Shadow	Ingress W.	9	17	47	
I.	Transit	Ingress	9	18	46	
I.	Shadow	Egress	9	20	5	
I.	Transit	Egress	9	21	4	
II.	Shadow	Ingress	10	2	15	
II.	Transit	Ingress	10	4	13	
II.	Shadow	Egress	10	5	0	
II.	Transit	Egress	10	6	56	
I.	Eclipse	Disapp. W.	10	15	8	53.8

W.—Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

			d	h	m	s
I.	Occult.	Reapp. W.	10	18	24	
I.	Shadow	Ingress	11	12	15	
I.	Transit	Ingress	11	13	15	
I.	Shadow	Egress	11	14	33	
I.	Transit	Egress W.	11	15	33	
II.	Eclipse	Disapp.	11	20	27	35.1
II.	Occult.	Reapp.	12	1	10	
I.	Eclipse	Disapp.	12	9	37	12.2
I.	Occult.	Reapp.	12	12	54	
III.	Eclipse	Disapp.	12	13	51	59.5
III.	Eclipse	Reapp. W.	12	17	7	2.3
III.	Occult.	Disapp. W.	12	17	57	
III.	Occult.	Reapp.	12	21	16	
I.	Shadow	Ingress	13	6	44	
I.	Transit	Ingress	13	7	45	
I.	Shadow	Egress	13	9	2	
I.	Transit	Egress	13	10	3	
II.	Shadow	Ingress W.	13	15	32	
II.	Transit	Ingress W.	13	17	35	
II.	Shadow	Egress W.	13	18	17	
II.	Transit	Egress	13	20	18	
I.	Eclipse	Disapp.	14	4	5	35.9
I.	Occult.	Reapp.	14	7	23	
I.	Shadow	Ingress	15	1	12	
I.	Transit	Ingress	15	2	14	
I.	Shadow	Egress	15	3	30	
I.	Transit	Egress	15	4	32	
II.	Eclipse	Disapp.	15	9	44	24.5
II.	Occult.	Reapp.	15	14	31	
IV.	Shadow	Ingress	15	20	32	
I.	Eclipse	Disapp.	15	22	33	55.6
IV.	Shadow	Egress	16	0	18	
I.	Occult.	Reapp.	16	1	53	
III.	Shadow	Ingress	16	3	32	
IV.	Transit	Ingress	16	6	41	
III.	Shadow	Egress	16	6	57	
III.	Transit	Ingress	16	7	51	
IV.	Transit	Egress	16	10	0	
III.	Transit	Egress	16	11	9	
I.	Shadow	Ingress	16	19	41	
I.	Transit	Ingress	16	20	44	
I.	Shadow	Egress	16	21	59	
I.	Transit	Egress	16	23	1	
II.	Shadow	Ingress	17	4	50	
II.	Transit	Ingress	17	6	57	
II.	Shadow	Egress	17	7	34	
II.	Transit	Egress	17	9	39	
I.	Eclipse	Disapp. W.	17	17	2	19.9
I.	Occult.	Reapp.	17	20	22	
I.	Shadow	Ingress	18	14	9	
I.	Transit	Ingress W.	18	15	13	
I.	Shadow	Egress W.	18	16	27	
I.	Transit	Egress W.	18	17	30	
II.	Eclipse	Disapp.	18	23	1	29.0
II.	Occult.	Reapp.	19	3	52	
I.	Eclipse	Disapp.	19	11	30	37.2
I.	Occult.	Reapp. W.	19	14	51	
III.	Eclipse	Disapp. W.	19	17	50	24.8
III.	Eclipse	Reapp.	19	21	4	43.8
III.	Occult.	Disapp.	19	22	12	
III.	Occult.	Reapp.	20	1	30	
I.	Shadow	Ingress	20	8	37	
I.	Transit	Ingress	20	9	42	
I.	Shadow	Egress	20	10	55	
I.	Transit	Egress	20	11	59	
II.	Shadow	Ingress W.	20	18	6	
II.	Transit	Ingress	20	20	19	
II.	Shadow	Egress	20	20	51	
II.	Transit	Egress	20	23	1	
I.	Eclipse	Disapp.	21	5	58	59.7
I.	Occult.	Reapp.	21	9	20	
I.	Shadow	Ingress	22	3	6	
I.	Transit	Ingress	22	4	12	
I.	Shadow	Egress	22	5	24	
I.	Transit	Egress	22	6	29	
II.	Eclipse	Disapp	22	12	18	19.3
II.	Occult.	Reapp. W.	22	17	13	
I.	Eclipse	Disapp.	23	0	27	18.4
I.	Occult.	Reapp.	23	3	49	
III.	Shadow	Ingress	23	7	29	
III.	Shadow	Egress	23	10	54	
III.	Transit	Ingress	23	12	4	
III.	Transit	Egress W.	23	15	20	
I.	Shadow	Ingress	23	21	34	
I.	Transit	Ingress	23	22	41	
I.	Shadow	Egress	23	23	52	
I.	Transit	Egress	24	0	58	
II.	Shadow	Ingress	24	7	23	
IV.	Eclipse	Disapp.	24	7	25	45.2
II.	Transit	Ingress	24	9	39	
II.	Shadow	Egress	24	10	8	
IV.	Eclipse	Reapp.	24	10	53	8.0
II.	Transit	Egress	24	12	21	
IV.	Occult.	Disapp. W.	24	18	16	
I.	Eclipse	Disapp.	24	18	55	41.3
IV.	Occult.	Reapp.	24	21	23	
I.	Occult.	Reapp.	24	22	19	
I.	Shadow	Ingress W.	25	16	2	

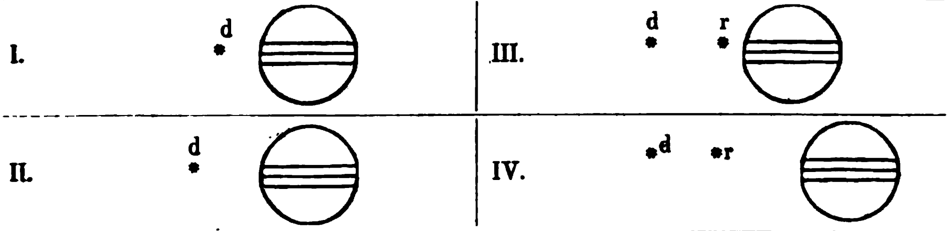
W.—Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress W.	25	17	10		II.	Shadow	Egress	27	23	25	
I.	Shadow	Egress W.	25	18	20		II.	Transit	Egress	28	1	42	
I.	Transit	Egress	25	19	27		I.	Eclipse	Disapp.	28	7	52	18.7
II.	Eclipse	Disapp.	26	1	35	29.0	I.	Occult.	Reapp.	28	11	17	
II.	Occult.	Reapp.	26	6	33		I.	Shadow	Ingress	29	4	58	
I.	Eclipse	Disapp.	26	13	23	57.4	I.	Transit	Ingress	29	6	8	
I.	Occult.	Reapp. W.	26	16	48		I.	Shadow	Egress	29	7	16	
III.	Eclipse	Disapp.	26	21	48	11.6	I.	Transit	Egress	29	8	25	
III.	Eclipse	Reapp.	27	1	1	46.0	II.	Eclipse	Disapp. W.	29	14	52	21.2
III.	Occult.	Disapp.	27	2	25		II.	Occult.	Reapp.	29	19	53	
III.	Occult.	Reapp.	27	5	40		I.	Eclipse	Disapp.	30	2	20	26.3
I.	Shadow	Ingress	27	10	30		I.	Occult.	Reapp.	30	5	46	
I.	Transit	Ingress	27	11	39		III.	Shadow	Ingress	30	11	27	
I.	Shadow	Egress	27	12	48		III.	Shadow	Egress W.	30	14	51	
I.	Transit	Egress	27	13	56		III.	Transit	Ingress W.	30	16	14	
II.	Shadow	Ingress	27	20	41		III.	Transit	Egress	30	19	29	
II.	Transit	Ingress	27	23	0		I.	Shadow	Ingress	30	23	27	

Phases of the Eclipses of the Satellites for an Inverting Telescope.



DECEMBER.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress	1	0	37		IV.	Transit	Egress	3	4	53	
I.	Shadow	Egress	1	1	45		II.	Occult.	Reapp.	3	9	12	
I.	Transit	Egress	1	2	54		I.	Eclipse	Disapp. W.	3	15	17	12.9
II.	Shadow	Ingress	1	9	58		I.	Occult.	Reapp.	3	18	44	
II.	Transit	Ingress	1	12	20		III.	Eclipse	Disapp.	4	1	46	0.1
II.	Shadow	Egress	1	12	42		III.	Eclipse	Reapp.	4	4	58	49.1
II.	Transit	Egress W.	1	15	1		III.	Occult.	Disapp.	4	6	34	
I.	Eclipse	Disapp.	1	20	48	57.7	III.	Occult.	Reapp.	4	9	47	
I.	Occult.	Reapp.	2	0	15		I.	Shadow	Ingress	4	12	24	
IV.	Shadow	Ingress W.	2	14	31		I.	Transit	Ingress W	4	13	35	
I.	Shadow	Ingress W.	2	17	55		I.	Shadow	Egress W	4	14	41	
IV.	Shadow	Egress W.	2	18	10		I.	Transit	Egress W.	4	15	52	
I.	Transit	Ingress	2	19	6		II.	Shadow	Ingress	4	23	16	
I.	Shadow	Egress	2	20	13		II.	Transit	Ingress	5	1	40	
I.	Transit	Egress	2	21	23		II.	Shadow	Egress	5	2	0	
IV.	Transit	Ingress	3	2	0		II.	Transit	Egress	5	4	21	
II.	Eclipse	Disapp.	3	4	9	36.2	I.	Eclipse	Disapp.	5	9	45	33.1

W.—Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

				d	h	m	s
I.	Occult.	Reapp.		5	13	13	
I.	Shadow	Ingress		6	6	52	
I.	Transit	Ingress		6	8	4	
I.	Shadow	Egress		6	9	9	
I.	Transit	Egress		6	10	21	
II.	Eclipse	Disapp.	W.	6	17	26	30.0
II.	Occult.	Reapp.		6	22	31	
I.	Eclipse	Disapp.		7	4	13	49.8
I.	Occult.	Reapp.		7	7	41	
III.	Shadow	Ingress	W.	7	15	25	
III.	Shadow	Egress		7	18	48	
III.	Transit	Ingress		7	20	22	
III.	Transit	Egress		7	23	34	
I.	Shadow	Ingress		8	1	20	
I.	Transit	Ingress		8	2	32	
I.	Shadow	Egress		8	3	37	
I.	Transit	Egress		8	4	49	
II.	Shadow	Ingress		8	12	32	
II.	Transit	Ingress	W.	8	15	0	
II.	Shadow	Egress	W.	8	15	16	
II.	Transit	Egress	W.	8	17	40	
I.	Eclipse	Disapp.		8	22	42	10.2
I.	Occult.	Reapp.		9	2	10	
I.	Shadow	Ingress		9	19	49	
I.	Transit	Ingress		9	21	1	
I.	Shadow	Egress		9	22	6	
I.	Transit	Egress		9	23	18	
II.	Eclipse	Disapp.		10	6	43	50.7
II.	Occult.	Reapp.		10	11	50	
I.	Eclipse	Disapp.	W.	10	17	10	24.4
I.	Occult.	Reapp.		10	20	39	
IV.	Eclipse	Disapp.		11	1	24	47.4
IV.	Eclipse	Reapp.		11	4	44	39.2
III.	Eclipse	Disapp.		11	5	43	19.3
III.	Eclipse	Reapp.		11	8	55	22.3
III.	Occult.	Disapp.		11	10	40	
IV.	Occult.	Disapp.	W.	11	13	17	
III.	Occult.	Reapp.	W.	11	13	50	
I.	Shadow	Ingress	W.	11	14	17	
I.	Transit	Ingress	W.	11	15	30	
IV.	Occult.	Reapp.	W.	11	15	56	
I.	Shadow	Egress	W.	11	16	34	
I.	Transit	Egress	W.	11	17	47	
II.	Shadow	Ingress		12	1	50	
II.	Transit	Ingress		12	4	18	
II.	Shadow	Egress		12	4	34	
II.	Transit	Egress		12	6	58	
I.	Eclipse	Disapp.		12	11	38	43.6
I.	Occult.	Reapp.	W.	12	15	8	
I.	Shadow	Ingress		13	8	45	
I.	Transit	Ingress		13	9	59	
I.	Shadow	Egress		13	11	2	
I.	Transit	Egress		13	12	16	
II.	Eclipse	Disapp.		13	20	0	46.1
II.	Occult.	Reapp.		14	1	9	
I.	Eclipse	Disapp.		14	6	6	59.6
I.	Occult.	Reapp.		14	9	36	
III.	Shadow	Ingress		14	19	23	
III.	Shadow	Egress		14	22	45	
III.	Transit	Ingress		15	0	27	
I.	Shadow	Ingress		15	3	13	
III.	Transit	Egress		15	3	36	
I	Transit	Ingress		15	4	27	
I.	Shadow	Egress		15	5	30	
I.	Transit	Egress		15	6	44	
II.	Shadow	Ingress	W.	15	15	6	
II.	Transit	Ingress	W.	15	17	36	
II.	Shadow	Egress	W.	15	17	50	
II.	Transit	Egress		15	20	16	
I.	Eclipse	Disapp.		16	0	35	19.1
I.	Occult.	Reapp.		16	4	4	
I.	Shadow	Ingress		16	21	41	
I.	Transit	Ingress		16	22	55	
I.	Shadow	Egress		16	23	58	
I.	Transit	Egress		17	1	12	
II.	Eclipse	Disapp.		17	9	17	13.2
II.	Occult.	Reapp.	W.	17	14	27	
I.	Eclipse	Disapp.		17	19	3	33.9
I.	Occult.	Reapp.		17	22	33	
III.	Eclipse	Disapp.		18	9	40	34.3
III.	Eclipse	Reapp.	W.	18	12	51	50.9
III.	Occult.	Disapp.	W.	18	14	41	
I.	Shadow	Ingress	W.	18	16	10	
I.	Transit	Ingress	W.	18	17	24	
III.	Occult.	Reapp.	W.	18	17	50	
I.	Shadow	Egress	W.	18	18	27	
I.	Transit	Egress		18	19	41	
II.	Shadow	Ingress		19	4	23	
II.	Transit	Ingress		19	6	54	
II.	Shadow	Egress		19	7	7	
IV.	Shadow	Ingress		19	8	29	
II.	Transit	Egress		19	9	34	
IV.	Shadow	Egress		19	12	1	
I.	Eclipse	Disapp.	W.	19	13	31	51.4
I.	Occult.	Reapp.	W.	19	17	1	
IV.	Transit	Ingress		19	20	37	
IV.	Transit	Egress		19	23	1	
I.	Shadow	Ingress		20	10	38	

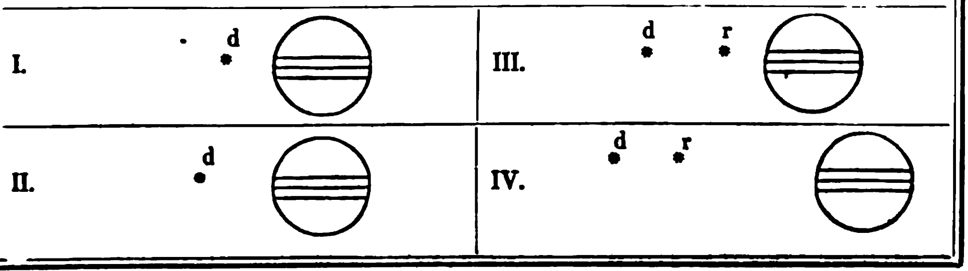
W.—Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

			d	h	m	s
I.	Transit	Ingress	20	11	52	
I.	Shadow	Egress W.	20	12	55	
I.	Transit	Egress W.	20	14	9	
II.	Eclipse	Disapp.	20	22	35	10.9
II.	Occult.	Reapp.	21	3	44	
I.	Eclipse	Disapp.	21	8	0	7.2
I.	Occult.	Reapp.	21	11	29	
III.	Shadow	Ingress	21	23	21	
III.	Shadow	Egress	22	2	42	
III.	Transit	Ingress	22	4	26	
I.	Shadow	Ingress	22	5	7	
I.	Transit	Ingress	22	6	21	
I.	Shadow	Egress	22	7	24	
III.	Transit	Egress	22	7	34	
I.	Transit	Egress	22	8	37	
II.	Shadow	Ingress W.	22	17	40	
II.	Transit	Ingress	22	20	11	
II.	Shadow	Egress	22	20	23	
II.	Transit	Egress	22	22	51	
I.	Eclipse	Disapp.	23	2	28	25.7
I.	Occult.	Reapp.	23	5	57	
I.	Shadow	Ingress	23	23	35	
I.	Transit	Ingress	24	0	49	
I.	Shadow	Egress	24	1	52	
I.	Transit	Egress	24	3	5	
II.	Eclipse	Disapp.	24	11	52	44.1
II.	Occult.	Reapp. W.	24	17	1	
I.	Eclipse	Disapp.	24	20	56	39.1
I.	Occult.	Reapp.	25	0	25	
III.	Eclipse	Disapp. W.	25	13	38	7.3
III.	Eclipse	Reapp. W.	25	16	48	36.7
I.	Shadow	Ingress W.	25	18	3	
III.	Occult.	Disapp.	25	18	39	
I.	Transit	Ingress	25	19	17	
I.	Shadow	Egress	25	20	20	
I.	Transit	Egress	25	21	33	
III.	Occult.	Reapp.	25	21	45	
II.	Shadow	Ingress	26	6	57	
II.	Transit	Ingress	26	9	28	
II.	Shadow	Egress	26	9	40	
II.	Transit	Egress	26	12	7	
I.	Eclipse	Disapp.	26	15	24	57.1
I.	Occult.	Reapp.	26	18	53	
I.	Shadow	Ingress	27	12	32	
I.	Transit	Ingress W.	27	13	45	
I.	Shadow	Egress W.	27	14	49	
I.	Transit	Egress W.	27	16	1	
IV.	Eclipse	Disapp.	27	19	24	6.4
IV.	Eclipse	Reapp.	27	22	36	3.2
II.	Eclipse	Disapp.	28	1	9	45.4
II.	Occult.	Reapp.	28	6	18	
IV.	Occult.	Disapp.	28	7	32	
IV.	Occult.	Reapp.	28	9	40	
I.	Eclipse	Disapp.	28	9	53	12.6
I.	Occult.	Reapp. W.	28	13	21	
III.	Shadow	Ingress	29	3	18	
III.	Shadow	Egress	29	6	39	
I.	Shadow	Ingress	29	7	0	
I.	Transit	Ingress	29	8	13	
III.	Transit	Ingress	29	8	22	
I.	Shadow	Egress	29	9	17	
I.	Transit	Egress	29	10	29	
III.	Transit	Egress	29	11	28	
II.	Shadow	Ingress	29	20	13	
II.	Transit	Ingress	29	22	44	
II.	Shadow	Egress	29	22	57	
II.	Transit	Egress	30	1	22	
I.	Eclipse	Disapp.	30	4	21	30.5
I.	Occult.	Reapp.	30	7	49	
I.	Shadow	Ingress	31	1	28	
I.	Transit	Ingress	31	2	41	
I.	Shadow	Egress	31	3	45	
I.	Transit	Egress	31	4	57	
II.	Eclipse	Disapp. W.	31	14	27	26.3
II.	Occult.	Reapp.	31	19	34	
I.	Eclipse	Disapp.	31	22	49	43.6

Phases of the Eclipses of the Satellites for an Inverting Telescope.



* W.—Visible at Washington.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

		h m			h m			h m			h m
Jan.	1	10 50.2	Mar.	20	5 58.9	June	4	8 8.2	Oct.	18	16 48.8
	3	5 16.7		22	0 25.6		6	2 37.7		20	11 18.8
	4	23 43.3		23	18 52.3		7	21 7.2		22	5 48.7
	6	18 9.8		25	13 19.1		9	15 36.7		24	0 18.6
	8	12 36.2		27	7 45.9		11	10 6.3		25	18 48.5
	10	7 2.6		29	2 12.9		13	4 36.0		27	13 18.3
	12	1 28.9		30	20 39.9		14	23 5.7		29	7 48.0
	13	19 55.3	April	1	15 7.0		16	17 35.3		31	2 17.7
	15	14 21.5		3	9 34.1		18	12 5.1	Nov.	1	20 47.4
	17	8 47.6		5	4 1.3		20	6 34.9		3	15 17.1
	19	3 13.7		6	22 28.5		22	1 4.8		5	9 46.6
	20	21 39.8		8	16 56.0		23	19 34.6		7	4 16.2
	22	16 5.8		10	11 23.4		25	14 4.5		8	22 45.8
	24	10 31.8		12	5 51.0		27	8 34.3		10	17 15.3
	26	4 57.8		14	0 18.6		29	3 4.3		12	11 44.7
	27	23 23.7		15	18 46.2		30	21 34.2		14	6 14.2
	29	17 49.7		17	13 13.9	July	2	16 4.2		16	0 43.5
	31	12 15.6		19	7 41.8		4	10 34.2		17	19 12.9
Feb.	2	6 41.5		21	2 9.7		6	5 4.3		19	13 42.0
	4	1 7.3		22	20 37.6		7	23 34.3		21	8 11.3
	5	19 33.1		24	15 5.7		9	18 4.4		23	2 40.5
	7	13 58.8		26	9 33.8		11	12 34.5		24	21 9.8
	9	8 24.7		28	4 2.0		13	7 4.7		26	15 38.8
	11	2 50.5		29	22 30.3		15	1 34.7		28	10 7.9
	12	21 16.4	May	1	16 58.7		16	20 5.0		30	4 36.9
	14	15 42.1		3	11 27.0		18	14 35.3	Dec.	1	23 5.9
	16	10 8.0		5	5 55.5		20	9 5.5		3	17 34.7
	18	4 33.9		7	0 24.0		22	3 35.7		5	12 3.5
	19	22 59.7		8	18 52.5		23	22 5.9		7	6 32.3
	21	17 25.6		10	13 21.2		25	16 36.1		9	1 1.1
	23	11 51.5		12	7 49.8		27	11 6.7		10	19 29.7
	25	6 17.6		14	2 18.6		29	5 36.6		12	13 58.3
	27	0 43.6		15	20 47.5		31	0 7.0		14	8 26.9
	28	19 9.6		17	15 16.4	Aug.	1	18 37.2		16	2 55.4
Mar.	2	13 35.6		19	9 45.3		3	13 7.1		17	21 23.7
	4	8 1.7		21	4 14.4	Oct.	4	12 48.5		19	15 52.1
	6	2 27.9		22	22 43.4		6	7 18.7		21	10 20.4
	7	20 54.0		24	17 12.5		8	1 48.7		23	4 48.6
	9	15 20.3		26	11 41.6		9	20 18.8		24	23 16.7
	11	9 46.6		28	6 10.9		11	14 48.8		26	17 44.8
	13	4 13.0		30	0 40.1		13	9 18.9		28	12 13.0
	14	22 39.4		31	19 9.4		15	3 48.9		30	6 41.1
	16	17 5.8	June	2	13 38.8		16	22 18.9		32	1 8.9
	18	11 32.3									

SATELLITE II.

		h m			h m			h m			h m
Jan.	3	5 54.3	Jan.	31	15 7.9	Mar.	1	0 11.0	Mar.	29	9 29.2
	6	19 4.8	Feb.	4	4 16.2		4	13 20.0	April	1	22 41.3
	10	8 14.1		7	17 33.4		8	2 28.4		5	11 53.2
	13	21 24.4		11	6 31.5		11	15 37.9		9	1 6.3
	17	10 33.4		14	19 38.7		15	4 46.9		12	14 19.2
	20	23 43.5		18	8 47.0		18	17 57.3		16	3 33.2
	24	12 51.4		21	21 54.4		22	7 7.3		19	16 47.2
	28	2 0.5		25	11 3.1		25	20 18.4		23	6 2.3

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

	h m		h m		h m		h m
April 26	19 17.4	June 15	13 41.6	Aug. 4	8 57.9	Nov. 19	2 30.5
30	8 33.6	19	3 3.2	Oct. 7	10 3.4	22	15 51.1
May 3	21 50.1	22	16 24.8	10	23 26.6	26	5 11.6
7	11 7.3	26	5 46.4	14	12 49.7	29	18 31.5
11	0 24.8	29	19 8.8	18	2 12.6	Dec. 3	7 51.4
14	13 43.0	July 3	8 31.1	21	15 35.4	6	21 10.5
18	3 1.3	6	21 53.6	25	4 58.0	10	10 29.8
21	16 20.3	10	11 16.2	28	18 20.4	13	23 48.0
25	5 39.4	14	0 38.9	Nov. 1	7 42.6	17	13 6.4
28	18 59.0	17	14 1.3	4	21 4.7	21	2 23.8
June 1	8 18.9	21	3 24.8	8	10 26.5	24	15 41.3
4	21 39.2	24	16 48.0	11	23 48.1	28	4 57.7
8	10 59.6	28	6 11.3	15	13 9.3	31	18 14.2
12	0 20.5	31	19 34.6				

SATELLITE III.

	h m		h m		h m		h m
Jan. 1	12 17.7	Mar. 21	0 59.6	June 7	19 15.0	Oct. 22	6 40.5
8	15 46.1	28	4 28.5	14	23 26.9	29	11 0.8
15	19 11.0	April 4	8 1.3	22	3 43.0	Nov. 5	15 19.6
22	22 32.8	11	11 38.6	29	8 1.3	12	19 36.1
30	1 51.1	18	15 20.6	July 6	12 20.7	19	23 50.7
Feb. 6	5 7.9	25	19 7.3	13	16 41.9	27	4 2.0
13	8 23.2	May 2	22 59.3	20	21 4.6	Dec. 4	8 10.1
20	11 38.4	10	2 54.9	28	1 29.0	11	12 14.3
27	14 55.0	17	6 54.7	Aug. 4	5 54.0	18	16 14.8
Mar. 6	18 12.9	24	10 57.9	Oct. 7	21 54.4	25	20 11.6
13	21 34.7	31	15 4.3	15	2 18.5		

SATELLITE IV.

	h m		h m		h m		h m
Jan. 10	10 55.4	April 3	11 49.1	June 26	5 47.5	Nov. 8	0 23.0
27	1 37.0	20	4 6.8	July 13	1 43.3	24	19 49.4
Feb. 12	15 47.1	May 6	21 20.6	29	21 59.1	Dec. 11	14 36.7
Mar. 1	5 55.5	23	15 27.6	Oct. 5	8 10.5	28	8 35.9
17	20 29.1	June 9	10 19.1	22	4 27.3		

In the following Tables x and y are the rectangular coördinates for each Satellite, referred to the centre of the primary and the major and minor axes of the apparent ellipse described by the Satellite. x is positive on the *east* side of the planet; negative on the *west* side. y is positive when *north*; negative when *south*.

x' and y' are the coördinates which correspond to a constant value of the major axis and maximum value of the minor axis, as seen from the sun at its mean distance.

The factors by which x' and y' must be multiplied to obtain the coördinates x and y at any time, are given for each Satellite on pages 482–483.

p is the inclination of the minor axis of the apparent ellipse to the circle of declination; reckoned from the *north*, + towards the *east*.

COÖRDINATES IN THE MEAN APPARENT ELLIPSE DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (t) AFTER GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

t	x'	y'	t	x'	y'	t	x'	y'
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+ 6.6	0 15 0	+ 87.1	− 4.0	1 6 0	−105.1	− 1.8
0 0 20	5.4	6.6	0 15 20	83.7	4.3	1 6 20	106.4	1.5
0 0 40	10.8	6.6	0 15 40	80.1	4.5	1 6 40	107.5	1.2
0 1 0	16.1	6.6	0 16 0	76.4	4.7	1 7 0	108.3	0.8
0 1 20	21.4	6.5	0 16 20	72.5	5.0	1 7 20	108.8	0.5
0 1 40	26.6	6.4	0 16 40	68.4	5.2	1 7 40	109.1	− 0.2
0 2 0	+ 31.8	+ 6.3	0 17 0	+ 64.1	− 5.4	1 8 0	−109.1	+ 0.1
0 2 20	36.9	6.2	0 17 20	59.6	5.5	1 8 20	103.9	0.5
0 2 40	42.0	6.1	0 17 40	55.0	5.7	1 8 40	108.4	0.8
0 3 0	46.9	6.0	0 18 0	50.3	5.9	1 9 0	107.6	1.1
0 3 20	51.7	5.8	0 18 20	45.5	6.0	1 9 20	106.6	1.4
0 3 40	56.4	5.7	0 18 40	40.5	6.1	1 9 40	105.3	1.8
0 4 0	+ 60.9	+ 5.5	0 19 0	+ 35.5	− 6.3	1 10 0	−103.8	+ 2.1
0 4 20	65.3	5.3	0 19 20	30.4	6.4	1 10 20	102.0	2.4
0 4 40	69.5	5.1	0 19 40	25.2	6.4	1 10 40	99.9	2.7
0 5 0	73.6	4.9	0 20 0	19.9	6.5	1 11 0	97.6	3.0
0 5 20	77.5	4.7	0 20 20	14.6	6.6	1 11 20	95.1	3.3
0 5 40	81.2	4.4	0 20 40	9.2	6.6	1 11 40	92.3	3.5
0 6 0	+ 84.7	+ 4.2	0 21 0	+ 3.8	− 6.6	1 12 0	− 89.3	+ 3.8
0 6 20	88.0	3.9	0 21 20	− 1.5	6.6	1 12 20	86.1	4.1
0 6 40	91.1	3.7	0 21 40	6.9	6.6	1 12 40	82.7	4.3
0 7 0	94.0	3.4	0 22 0	12.3	6.6	1 13 0	79.1	4.6
0 7 20	96.6	3.1	0 22 20	17.6	6.5	1 13 20	75.3	4.8
0 7 40	99.0	2.8	0 22 40	22.9	6.5	1 13 40	71.3	5.0
0 8 0	+101.1	+ 2.5	0 23 0	− 28.1	− 6.4	1 14 0	− 67.1	+ 5.2
0 8 20	103.0	2.2	0 23 20	33.3	6.3	1 14 20	62.8	5.4
0 8 40	104.7	1.9	0 23 40	38.4	6.2	1 14 40	58.3	5.6
0 9 0	106.1	1.6	1 0 0	43.4	6.1	1 15 0	53.7	5.8
0 9 20	107.3	1.3	1 0 20	48.3	5.9	1 15 20	49.0	5.9
0 9 40	108.1	0.9	1 0 40	53.1	5.8	1 15 40	44.1	6.1
0 10 0	+108.7	+ 0.6	1 1 0	− 57.7	− 5.6	1 16 0	− 39.1	+ 6.2
0 10 20	109.1	+ 0.3	1 1 20	62.2	5.4	1 16 20	34.0	6.3
0 10 40	109.1	− 0.1	1 1 40	66.6	5.2	1 16 40	28.9	6.4
0 11 0	109.0	0.4	1 2 0	70.8	5.0	1 17 0	23.7	6.5
0 11 20	108.6	0.7	1 2 20	74.8	4.8	1 17 20	18.4	6.5
0 11 40	107.9	1.0	1 2 40	78.6	4.6	1 17 40	13.0	6.6
0 12 0	+106.9	− 1.3	1 3 0	− 82.2	− 4.4	1 18 0	− 7.7	+ 6.6
0 12 20	105.7	1.7	1 3 20	85.6	4.1	1 18 20	− 2.3	6.6
0 12 40	104.2	2.0	1 3 40	88.9	3.8	1 18 40	+ 3.1	6.6
0 13 0	102.5	2.3	1 4 0	91.9	3.6	1 19 0	8.5	6.6
0 13 20	100.5	2.6	1 4 20	94.7	3.3	1 19 20	13.8	6.6
0 13 40	98.3	2.9	1 4 40	97.3	3.0	1 19 40	19.1	6.5
0 14 0	+ 95.8	− 3.2	1 5 0	− 99.6	− 2.7	1 20 0	+ 24.4	+ 6.5
0 14 20	93.1	3.5	1 5 20	101.7	2.4			
0 14 40	+ 90.2	− 3.7	1 5 40	−103.5	− 2.1			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

t	x′	y′	t	x′	y′	t	x′	y′
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+12.2	1 6 0	+139.5	− 7.3	2 12 0	−166.4	− 3.5
0 0 40	8.5	12.2	1 6 40	134.2	7.7	2 12 40	168.6	2.9
0 1 20	17.0	12.1	1 7 20	128.6	8.2	2 13 20	170.4	2.3
0 2 0	25.5	12.1	1 8 0	122.7	8.6	2 14 0	171.9	1.8
0 2 40	33.9	12.0	1 8 40	116.5	9.0	2 14 40	173.0	1.2
0 3 20	42.2	11.8	1 9 20	110.1	9.4	2 15 20	173.6	− 0.6
0 4 0	+ 50.5	+11.7	1 10 0	+103.4	− 9.8	2 16 0	−173.8	0.0
0 4 40	58.6	11.5	1 10 40	96.4	10.1	2 16 40	173.6	+ 0.6
0 5 20	66.5	11.3	1 11 20	89.2	10.5	2 17 20	172.9	1.2
0 6 0	74.3	11.0	1 12 0	81.7	10.8	2 18 0	171.8	1.8
0 6 40	81.9	10.8	1 12 40	74.1	11.0	2 18 40	170.3	2.4
0 7 20	89.4	10.5	1 13 20	66.3	11.3	2 19 20	168.4	3.0
0 8 0	+ 96.6	+10.1	1 14 0	+ 58.3	−11.5	2 20 0	−166.2	+ 3.5
0 8 40	103.6	9.8	1 14 40	50.2	11.7	2 20 40	163.5	4.1
0 9 20	110.3	9.4	1 15 20	42.0	11.8	2 21 20	160.4	4.7
0 10 0	116.7	9.0	1 16 0	33.7	12.0	2 22 0	156.9	5.2
0 10 40	122.9	8.6	1 16 40	25.3	12.1	2 22 40	153.0	5.8
0 11 20	128.8	8.2	1 17 20	16.8	12.1	2 23 20	148.8	6.3
0 12 0	+134.4	+ 7.7	1 18 0	+ 8.3	−12.2	3 0 0	−144.2	+ 6.8
0 12 40	139.6	7.3	1 18 40	− 0.2	12.2	3 0 40	139.3	7.3
0 13 20	144.5	6.8	1 19 20	8.8	12.2	3 1 20	134.1	7.8
0 14 0	149.0	6.3	1 20 0	17.3	12.1	3 2 0	128.5	8.2
0 14 40	153.2	5.7	1 20 40	25.7	12.1	3 2 40	122.6	8.6
0 15 20	157.0	5.2	1 21 20	34.1	12.0	3 3 20	116.4	9.0
0 16 0	+160.5	+ 4.7	1 22 0	− 42.4	−11.8	3 4 0	−109.9	+ 9.4
0 16 40	163.6	4.1	1 22 40	50.6	11.7	3 4 40	103.1	9.8
0 17 20	166.3	3.5	1 23 20	58.7	11.5	3 5 20	96.1	10.1
0 18 0	168.6	3.0	2 0 0	66.7	11.3	3 6 0	88.9	10.5
0 18 40	170.5	2.4	2 0 40	74.5	11.0	3 6 40	81.5	10.8
0 19 20	171.9	1.8	2 1 20	82.1	10.7	3 7 20	73.9	11.0
0 20 0	+172.9	+ 1.2	2 2 0	− 89.5	−10.4	3 8 0	− 66.1	+11.3
0 20 40	173.6	+ 0.6	2 2 40	96.7	10.1	3 8 40	58.1	11.5
0 21 20	173.8	0.0	2 3 20	103.7	9.8	3 9 20	50.0	11.7
0 22 0	173.6	− 0.6	2 4 0	110.4	9.4	3 10 0	41.8	11.8
0 22 40	172.9	1.2	2 4 40	116.8	9.0	3 10 40	33.5	12.0
0 23 20	171.8	1.8	2 5 20	123.0	8.6	3 11 20	25.1	12.1
1 0 0	+170.4	− 2.4	2 6 0	−128.9	− 8.2	3 12 0	− 16.6	+12.1
1 0 40	168.5	3.0	2 6 40	134.5	7.7	3 12 40	− 8.1	12.2
1 1 20	166.2	3.5	2 7 20	139.7	7.2	3 13 20	+ 0.4	12.2
1 2 0	163.5	4.1	2 8 0	144.6	6.7	3 14 0	9.0	12.2
1 2 40	160.4	4.7	2 8 40	149.1	6.2	3 14 40	17.5	12.1
1 3 20	157.0	5.2	2 9 20	153.3	5.7	3 15 20	26.0	12.1
1 4 0	+153.2	− 5.8	2 10 0	−157.1	− 5.2	3 16 0	+ 34.4	+12.0
1 4 40	149.0	6.3	2 10 40	160.6	4.6			
1 5 20	+144.4	− 6.8	2 11 20	−163.7	− 4.1			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

t	*x′*	*y′*	*t*	*x′*	*y′*	*t*	*x′*	*y′*
d h m	″	″	d h m	″	″	h d m	″	″
0 0 0	+ 0.0	+17.4	2 12 0	+225.4	−10.1	5 0 0	−262.3	− 5.6
0 1 20	13.5	17.4	2 13 20	217.3	10.8	5 1 20	266.4	4.8
0 2 40	26.9	17.3	2 14 40	208.6	11.5	5 2 40	269.8	4.0
0 4 0	40.3	17.2	2 16 0	199.5	12.1	5 4 0	272.6	3.2
0 5 20	53.6	17.1	2 17 20	189.9	12.7	5 5 20	274.7	2.3
0 6 40	66.8	16.9	2 18 40	179.9	13.3	5 6 40	276.2	1.5
0 8 0	+ 79.8	+16.7	2 20 0	+169.4	−13.8	5 8 0	−277.0	− 0.6
0 9 20	92.7	16.4	2 21 20	158.5	14.3	5 9 20	277.2	+ 0.2
0 10 40	105.3	16.1	2 22 40	147.2	14.8	5 10 40	276.7	1.1
0 12 0	117.6	15.8	3 0 0	135.6	15.2	5 12 0	275.5	1.9
0 13 20	129.7	15.4	3 1 20	123.7	15.6	5 13 20	273.7	2.7
0 14 40	141.5	15.0	3 2 40	111.5	16.0	5 14 40	271.2	3.6
0 16 0	+153.0	+14.5	3 4 0	+ 99.0	−16.3	5 16 0	−268.1	+ 4.4
0 17 20	164.1	14.0	3 5 20	86.3	16.6	5 17 20	264.4	5.2
0 18 40	174.7	13.5	3 6 40	73.3	16.8	5 18 40	260.1	6.0
0 20 0	184.9	13.0	3 8 0	60.2	17.0	5 20 0	255.1	6.8
0 21 20	194.7	12.4	3 9 20	47.0	17.2	5 21 20	249.5	7.6
0 22 40	204.1	11.8	3 10 40	33.6	17.3	5 22 40	243.3	8.3
1 0 0	+213.0	+11.1	3 12 0	+ 20.2	−17.4	6 0 0	−236.6	+ 9.1
1 1 20	221.4	10.5	3 13 20	+ 6.7	17.4	6 1 20	229.3	9.8
1 2 40	229.3	9.8	3 14 40	− 6.8	17.4	6 2 40	221.4	10.5
1 4 0	236.6	9.1	3 16 0	20.3	17.4	6 4 0	213.0	11.1
1 5 20	243.3	8.3	3 17 20	33.7	17.3	6 5 20	204.1	11.8
1 6 40	249.5	7.6	3 18 40	47.1	17.2	6 6 40	194.7	12.4
1 8 0	+255.1	+ 6.8	3 20 0	− 60.3	−17.0	6 8 0	−184.9	+13.0
1 9 20	260.0	6.0	3 21 20	73.4	16.8	6 9 20	174.7	13.5
1 10 40	264.3	5.2	3 22 40	86.3	16.6	6 10 40	164.1	14.0
1 12 0	268.0	4.4	4 0 0	99.0	16.3	6 12 0	153.0	14.5
1 13 20	271.1	3.6	4 1 20	111.5	16.0	6 13 20	141.5	15.0
1 14 40	273.6	2.7	4 2 40	123.7	15.6	6 14 40	129.7	15.4
1 16 0	+275.5	+ 1.9	4 4 0	−135.7	−15.2	6 16 0	−117.6	+15.8
1 17 20	276.7	1.1	4 5 20	147.2	14.8	6 17 20	105.2	16.1
1 18 40	277.2	+ 0.2	4 6 40	158.4	14 3	6 18 40	92.6	16.4
1 20 0	277.0	− 0.6	4 8 0	169.3	13.8	6 20 0	79.8	16.7
1 21 20	276.2	1.5	4 9 20	179.8	13.3	6 21 20	66.8	16.9
1 22 40	274.7	2.3	4 10 40	189.9	12.7	6 22 40	53.6	17.1
2 0 0	+272.6	− 3.2	4 12 0	−199.5	−12.1	7 0 0	− 40.3	+17.2
2 1 20	269.8	4.0	4 13 20	208.6	11.5	7 1 20	26.9	17.3
2 2 40	266.4	4.8	4 14 40	217.3	10.8	7 2 40	− 13.4	17.4
2 4 0	262.3	5.6	4 16 0	225.5	10.1	7 4 0	+ 0.1	17.4
2 5 20	257.6	6.4	4 17 20	233.1	9.4	7 5 20	13.6	17.4
2 6 40	252.3	7.2	4 18 40	240.1	8.7	7 6 40	27.0	17.3
2 8 0	+246.4	− 8.0	4 20 0	−246.5	− 8.0	7 8 0	+ 40.4	+17.2
2 9 20	240.0	8.7	4 21 20	252.3	7.2			
2 10 40	+233.0	− 9.4	4 22 40	−257.6	− 6.4			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

t	x′	y′	t	x′	y′	t	x′	y′
d h			d h			d h		
0 0	+ 0″.0	+34″.8	5 18	+406″.2	−19″.3	11 12	−449″.0	−13″.5
0 3	22.8	34.8	5 21	393.1	20.6	11 15	457.4	12.0
0 6	45.6	34.7	6 0	379.2	21.9	11 18	464.8	10.5
0 9	68.3	34.5	6 3	364.4	23.1	11 21	471.2	8.9
0 12	90.9	34.2	6 6	348.8	24.3	12 0	476.5	7.3
0 15	113.2	33.9	6 9	332.5	25.5	12 3	480.8	5.7
0 18	+135.3	+33.5	6 12	+315.4	−26.6	12 6	−484.0	− 4.1
0 21	157.1	33.0	6 15	297.6	27.6	12 9	486.2	2.5
1 0	178.5	32.4	6 18	279.2	28.5	12 12	487.3	− 0.8
1 3	199.6	31.8	6 21	260.2	29.4	12 15	487.3	+ 0.8
1 6	220.3	31.1	7 0	240.6	30.3	12 18	486.3	2.4
1 9	240.4	30.3	7 3	220.5	31.1	12 21	484.2	4.0
1 12	+260.0	+29.5	7 6	+199.9	−31.8	13 0	−480.9	+ 5.7
1 15	279.0	28.6	7 9	178.8	32.4	13 3	476.6	7.3
1 18	297.4	27.6	7 12	157.4	33.0	13 6	471.3	8.9
1 21	315.2	26.6	7 15	135.6	33.5	13 9	465.0	10.5
2 0	332.3	25.5	7 18	113.5	33.9	13 12	457.6	12.0
2 3	348.6	24.3	7 21	91.2	34.2	13 15	449.3	13.5
2 6	+364.1	+23.1	8 0	+ 68.7	−34.5	13 18	−440.0	+15.0
2 9	378.9	21.9	8 3	46.0	34.7	13 21	429.7	16.4
2 12	392.9	20.6	8 6	23.2	34.8	14 0	418.5	17.8
2 15	406.0	19.3	8 9	+ 0.3	34.8	14 3	406.3	19.2
2 18	418.2	17.9	8 12	− 22.5	34.8	14 6	393.2	20.6
2 21	429.5	16.5	8 15	45.3	34.7	14 9	379.3	21.9
3 0	+439.8	+15.0	8 18	− 68.0	−34.5	14 12	+364.6	+23.1
3 3	449.1	13.5	8 21	90.5	34.2	14 15	349.1	24.3
3 6	457.5	12.0	9 0	112.9	33.9	14 18	332.8	25.4
3 9	464.9	10.5	9 3	135.0	33.5	14 21	315.7	26.5
3 12	471.3	8.9	9 6	156.8	33.0	15 0	298.0	27.5
3 15	476.6	7.3	9 9	178.2	32.4	15 3	279.6	28.5
3 18	+480.8	+ 5.7	9 12	−199.3	−31.8	15 6	−260.5	+29.4
3 21	484.0	4.1	9 15	220.0	31.1	15 9	240.9	30.3
4 0	486.2	2.5	9 18	240.1	30.3	15 12	220.8	31.1
4 3	487.3	+ 0.8	9 21	259.7	29.5	15 15	200.2	31.8
4 6	487.3	− 0.8	10 0	278.7	28.6	15 18	179.2	32.4
4 9	486.3	2.4	10 3	297.2	27.6	15 21	157.7	33.0
4 12	+484.2	− 4.1	10 6	−315.0	−26.6	16 0	−135.9	+33.5
4 15	480.9	5.7	10 9	332.1	25.5	16 3	113.8	33.9
4 18	476.6	7.3	10 12	348.4	24.4	16 6	91.5	34.2
4 21	471.3	8.9	10 15	363.9	23.2	16 9	69.0	34.5
5 0	465.0	10.4	10 18	378.7	21.9	16 12	46.3	34.7
5 3	457.7	12.0	10 21	392.7	20.6	16 15	23.5	34.8
5 6	+449.3	−13.5	11 0	−405.8	−19.3	16 18	− 0.6	+34.8
5 9	439.9	15.0	11 3	418.0	17.9	16 21	+ 22.2	34.8
5 12	429.6	16.4	11 6	429.3	16.5	17 0	+ 45.0	+34.7
5 15	+418.4	−17.9	11 9	−439.6	−15.0			

SATELLITE I.

Date, 1873.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1873.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x'.	Factor for y'.	p.	x.	y.		Factor for x'.	Factor for y'.	p.	x.	y.
Jan. 1	1.116	−0.279	+23° 0′.7	−37″	−2″	June 6	0.916	−0.167	+21° 46′.4	+34″	−1″
8	1.136	0.288	22 55.9	35	2	13	0.900	0.170	21 59.5	32	1
15	1.153	0.294	22 49.3	33	2	20	0.885	0.175	22 13.5	31	1
22	1.167	0.297	22 41.1	31	2	27	0.872	0.181	22 27.9	29	1
29	1.178	0.297	22 31.5	28	2	July 4	0.860	0.188	22 42.7	28	1
Feb. 5	1.185	−0.293	+22 20.7	−26	−2	11	0.849	−0.196	+22 57.7	+26	−1
12	1.188	0.287	22 9.0	−23	2	18	0.839	0.205	23 12.6	25	1
19	1.187	0.279	21 56.9	+24	2	25	0.831	0.215	23 27.1	24	1
27	1.181	0.268	21 44.8	27	2	Aug. 1	0.824	0.225	23 40.9	+22	−1
Mar. 6	1.171	0.256	21 33.1	30	2	Oct. 4	0.823	0.354	25 10.4	−21	2
13	1.158	−0.242	+21 22.3	+32	−2	11	0.829	−0.372	+25 15.4	−22	−2
20	1.142	0.228	21 12.9	34	1	18	0.837	0.392	25 19.3	24	2
27	1.124	0.216	21 5.4	36	1	25	0.847	0.413	25 22.3	26	3
Apr. 3	1.104	0.205	20 59.9	37	1	Nov. 1	0.858	0.434	25 24.4	28	3
10	1.082	0.194	20 56.6	38	1	8	0.870	0.456	25 25.8	30	3
17	1.060	0.185	20 55.7	39	1	16	0.884	0.479	25 26.5	31	3
24	1.038	−0.177	+20 56.9	+39	−1	23	0.899	−0.503	+25 26.6	−32	−3
May 1	1.016	0.171	21 0.4	39	1	30	0.915	0.528	25 26.3	33	3
8	0.994	0.167	21 6.2	38	1	Dec. 7	0.933	0.553	25 25.7	34	4
15	0.973	0.165	21 14.0	37	1	14	0.952	0.579	25 25.0	35	4
22	0.953	0.164	21 23.4	36	1	21	0.972	0.605	25 24.2	36	4
30	0.934	−0.165	+21 34.3	+35	−1	28	0.993	−0.632	+25 23.5	−37	−4

SATELLITE II.

Date. 1873.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date. 1873.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x'.	Factor for y'.	p.	x.	y.		Factor for x'.	Factor for y'.	p.	x.	y.
Jan. 3	1.121	−0.361	+22° 58′.0	−47″	−4″	June 8	0.911	−0.242	+21° 49′.2	+43″	−3″
10	1.140	0.371	22 52.9	44	4	15	0.895	0.243	22 2.0	41	3
17	1.156	0.378	22 46.0	40	4	22	0.880	0.246	22 15.6	38	3
24	1.170	0.382	22 37.6	36	5	29	0.867	0.250	22 29.6	36	3
31	1.180	0.382	22 27.9	32	5	July 6	0.855	0.255	22 43.9	34	3
Feb. 7	1.186	−0.379	+22 17.1	−28	−5	14	0.845	−0.261	+22 58.1	+32	−3
14	1.188	0.373	22 5.5	+22	5	21	0.836	0.267	23 12.1	29	3
21	1.186	0.365	21 53.5	26	4	28	0.828	0.274	23 25.8	27	3
Mar. 1	1.179	0.354	21 41.7	31	4	Aug. 4	0.822	0.282	23 39.0	+24	3
8	1.167	0.342	21 30.5	36	4	Oct. 7	0.825	0.388	24 59.0	−25	5
15	1.153	−0.328	+21 20.3	+41	−4	14	0.832	−0.403	+25 3.0	−28	−5
22	1.137	0.315	21 11.5	44	4	21	0.841	0.419	25 5.9	30	5
29	1.118	0.302	21 4.6	47	4	28	0.851	0.437	25 8 0	33	5
Apr. 5	1.097	0.290	20 59.7	49	3	Nov. 4	0.863	0.456	25 9.3	35	5
12	1.075	0.279	20 57.0	50	3	11	0.876	0.475	25 9.8	37	6
19	1.053	0.270	20 56.7	50	3	19	0.890	0.495	25 9.8	39	6
26	1.030	−0.262	+20 58.6	+50	−3	26	0.906	−0.516	+25 9.3	−41	−6
May 3	1.008	0.255	21 2.7	49	3	Dec. 3	0.923	0.537	25 8.4	43	6
11	0.987	0.249	21 8.7	48	3	10	0.941	0.559	25 7.4	45	7
18	0.967	0.245	21 16.6	47	3	17	0.961	0.582	25 6.3	46	7
25	0.947	0.243	21 26.1	46	3	24	0.982	0.606	25 5.3	47	7
June 1	0.928	−0.242	+21 37.1	+45	−3	31	1.003	−0.630	+25 4.4	−48	−7

SATELLITE III.

Date, 1873.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.				Date. 1873.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x′.	Factor for y′.	p.	Dis.		Reap.			Factor for x′.	Factor for y′.	p.	Dis.		Reap.	
				x.	y.	x.	y.					x.	y.	x.	y.
			° ′	″	″	″	″				° ′	″	″	″	″
Jan. 1	1.116	−0.200	+23 0.7	−63	−3	−23	−3	June 7	0.912	−0.105	+21 48.6	+28	−2	+59	−2
8	1.136	0.208	22 55.9	58	4	. .	. .	14	0.896	0.110	22 2.5	26	2	56	2
15	1.153	0.212	22 49.0	53	4	. .	. .	21	0.882	0.116	22 17.0	23	2	53	2
22	1.167	0.213	22 40.4	46	4	. .	. .	29	0.869	0.123	22 31.7	20	2	50	2
30	1.179	0.213	22 30.6	39	4	. .	. .	July 6	0.857	0.130	22 46.7	+17	−2	46	2
Feb. 6	1.186	−0.210	+22 19.6	−31	−4	. .	. .	13	0.846	−0.138	+23 2.2	. .	. .	+42	−2
13	1.188	0.203	22 7.5	−23	−4	. .	. .	20	0.836	0.148	23 17.9	. .	. .	38	3
20	1.186	0.194	21 55.0	. .	. .	+29	−3	28	0.828	0.159	23 33.0	. .	. .	34	3
27	1.180	0.184	21 42.5	. .	. .	37	3	Aug. 4	0.822	0.170	23 47.2	. .	. .	30	3
Mar. 6	1.170	0.173	21 30.6	. .	. .	44	3	Oct. 7	0.826	0.303	25 17.8	−32	−5	. .	. .
13	1.157	−0.161	+21 19.7	. .	. .	+51	−3	15	0.833	−0.322	+25 22.6	−30	−6	. .	. .
21	1.141	0.149	21 10.3	. .	. .	57	3	22	0.842	0.341	25 26.4	40	6	. .	.
28	1.121	0.138	21 2.8	+22	−2	62	2	29	0.852	0.361	25 29.3	44	6	−15	−6
Apr. 4	1.100	0.128	20 57.5	26	2	65	2	Nov. 5	0.864	0.382	25 31.3	47	7	19	7
11	1.079	0.119	20 54.4	30	2	67	2	12	0.877	0.404	25 32.5	50	7	22	7
18	1.057	0.112	20 53.8	32	2	69	2	19	0.891	0.426	25 33.2	54	7	25	7
25	1.034	−0.106	+20 55.5	+34	−2	+70	−2	27	0.907	−0.450	+25 33.3	−57	−8	−28	−8
May 2	1.012	0.102	20 59.7	34	2	69	2	Dec. 4	0.925	0.475	25 33.0	60	8	30	8
10	0.990	0.100	21 5.9	34	2	68	2	11	0.944	0.500	25 32.5	62	9	32	9
17	0.969	0.099	21 14.1	33	2	67	2	18	0.964	0.525	25 31.8	64	9	33	9
24	0.949	0.100	21 24.2	32	2	65	2	25	0.985	−0.550	+25 31.1	−65	−9	−34	−9
31	0.930	−0.102	+21 35.8	+30	−2	+62	−2								

SATELLITE IV.

Date. 1873.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.				Date, 1873.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x′.	Factor for y′.	p.	Dis.		Reap.			Factor for x′.	Factor for y′.	p.	Dis.		Reap.	
				x.	y.	x.	y.					x.	y.	x.	y.
			° ′	″	″	″	″				° ′	″	″	″	″
Jan. 10	1.140	−0.196	+22 40.5	−86	−6	−45	−6	June 26	0.874	−0.102	+22 11.3	+50	−3	+79	−3
27	1.174	0.183	22 21.1	59	6	. .	. .	July 13	0.847	0.115	22 47.2	36	4	64	4
Feb. 12	1.188	0.174	21 55.5	−25	−6	. .	. .	29	0.827	0.133	23 22.5	+22	−5	+49	−5
Mar. 1	1.179	0.159	21 25.8	. .	. .	+51	−5	Oct. 5	0.824	0.240	25 2.7	−44	−8	−19	−8
17	1.148	0.137	21 0.4	+40	−5	80	5	22	0.842	0.276	25 13.7	59	10	35	10
Apr. 3	1.104	−0.116	+20 44.1	+61	−4	+99	−4	Nov. 8	0.868	−0.316	+25 19.5	−71	−11	−48	11
20	1.052	0.100	20 39.8	72	3	108	3	24	0.903	0.360	25 19.6	85	12	61	12
May 6	0.999	0.091	20 48.7	75	3	108	3	Dec. 11	0.945	0.407	25 20.7	95	14	71	14
23	0.951	0.088	21 8.9	71	3	102	3	28	0.992	−0.456	+25 19.4	−99	−16	−75	16
June 9	0.909	−0.092	+21 37.5	+62	−3	+92	−3								

THE APPARENT ELEMENTS OF SATURN'S RING.

t Washington Mean Noon.	*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Equator.	*u′* Ecliptic,
Jan. 0	34″.18	13″.35	+7° 30′.9	+22° 59′.3	+22° 39′.2	350° 42′	307° 43′
20	34.14	12.97	7 32.4	22 18.3	22 30.0	353 12	310 13
Feb. 9	34.42	12.68	7 33.1	21 36.6	22 20.5	355 31	312 32
March 1	35.00	12.51	7 32.9	20 56.9	22 10.8	357 42	314 43
21	35.87	12.49	7 32.2	20 22.9	22 1.0	359 28	316 29
April 10	36.98	12.63	7 31.4	19 58.1	21 51.1	359 20	316 22
30	38.23	12.92	7 30.9	19 45.2	21 41.0	358 8	315 10
May 20	39.50	13.36	7 31.0	19 46.0	21 30.7	358 33	315 35
June 9	40.64	13.90	7 31.5	20 0.1	21 20.3	359 5	316 7
29	41.46	14.46	7 32.3	20 24.9	21 9.8	360 0	317 2
July 19	41.80	14.93	7 33.2	20 55.6	20 59.1	358 30	315 32
Aug. 8	41.60	15.20	7 33.6	21 26.2	20 48.3	356 0	313 2
28	40.90	15.22	7 33.8	21 50.8	20 37.3	355 47	312 49
Sept. 17	39.82	14.98	7 33.8	22 5.4	20 26.2	355 3	313 5
Oct. 7	38.56	14.53	7 33.8	22 7.9	20 15.0	354 7	311 9
27	37.30	13.95	7 33.9	21 57.7	20 3.6	355 34	312 36
Nov. 16	36.16	13.31	7 33.9	21 35.4	19 52.1	356 45	313 47
Dec. 6	35.25	12.66	7 33.4	21 2.3	19 40.4	358 32	315 34
26	34.62	12.03	7 32.2	20 20.3	19 28.6	359 20	316 22
31	34.51	11.89	+7 31.8	+20 9.1	+19 25.7	358 54	315 57

Factors which are to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring	=0.8801	log. Factor	=9.9445
The outer ellipse of the inner Ring	=0.8599	"	=9.9344
The inner ellipse of the inner Ring	=0.6650	"	=9.8228
The inner ellipse of Bond's dusky Ring	=0.5486	"	=9.7392

Note.—The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1873.	Venus.	Mars.	1873.	Venus.	Mars.
January 1	.730	.906	July 30	.580	.860
31	.618	.903	August 29	.703	.855
March 2	.473	.923	September 28	.802	.863
April 1	.256	.971	October 28	.879	.879
May 1	.010	.999	November 27	.936	.896
31	.181	.948	December 27	.973	.919
June 30	.408	.889			

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
Jan.	1	1	–	☉ in Perigee.		
	1	9	37	☌ ♀ ☾ . . . . . ♀ +	3	31
	2	22	27	♆ stationary.		
	5	4	30	☿ greatest elong. W.	23	12
	5	17	5	☌ ♆ ☾ . . . . . ♆ +	1	42
	12	21	13	□ ♆ ☉		
	12	23	16	☌ ♄ ☉		
	13	18	39	☌ ♅ ☾ . . . . . ♅ —	3	56
	15	21	34	☌ ♃ ☾ . . . . . ♃ —	4	13
	17	0	38	☿ in ☋		
	17	4	34	□ ♂ ☉		
	20	22	23	☌ ♂ ☾ . . . . . ♂ —	0	48
	22	23	33	☍ ♅ ☉		
	26	19	42	☌ ☿ ☾ . . . . . ☿ +	2	44
	27	1	43	☌ ♃ ☾ . . . . . ♃ +	4	4
	27	5	0	☿ in Aphelion.		
	29	13	1	☌ ☿ ♄ . . . . . ☿ —	1	22
	31	1	42	☌ ♀ ☾ . . . . . ♀ +	4	52
Feb.	1	11	51	♀ in ☊		
	2	0	44	☌ ♆ ☾ . . . . . ♆ +	1	26
	9	22	31	☌ ♅ ☾ . . . . . ♅ —	3	54
	11	21	35	☌ ♃ ☾ . . . . . ♃ —	4	2
	14	8	43	☍ ♃ ☉		
	16	14	55	☿ greatest Hel. Lat. S.		
	18	2	2	☌ ♂ ☾ . . . . . ♂ +	0	31
	20	22	21	☌ ☿ ☉ Sup.		
	22	3	52	♀ greatest elong. E.	46	31
	23	17	15	☌ ♄ ☾ . . . . . ♄ +	4	19
	26	16	18	☌ ☿ ☾ . . . . . ☿ +	3	44
	27	8	54	☌ ♆ ♀ . . . . . ♆ —	4	26
Mar.	1	11	26	☌ ♆ ☾ . . . . . ♆ +	1	5
	1	14	58	☌ ♀ ☾ . . . . . ♀ +	5	40
	7	12	9	♀ in Perihelion.		
	7	14	45	☿ in ☊		
	9	2	48	☌ ♅ ☾ . . . . . ♅ —	4	1
	10	21	10	☌ ♃ ☾ . . . . . ♃ —	4	3
	12	4	39	☿ in Perihelion.		
	17	17	26	☌ ♂ ☾ . . . . . ♂ +	1	8
	18	7	26	☿ greatest elong. E.	18	37
	19	19	44	☉ enters ♈, spring com.		
	21	3	45	♂ stationary.		
	22	12	12	☿ greatest Hel. Lat. N.		
	23	5	45	☌ ♄ ☾ . . . . . ♄ +	4	35
	26	5	40	☿ stationary.		
	28	12	30	☌ ☿ ☾ . . . . . ☿ +	6	57
	28	23	48	♀ greatest Hel. Lat. N.		
	28	23	46	☌ ♆ ☾ . . . . . ♆ +	0	58
	29	–	–	♀ at greatest brilliancy.		
	30	15	10	☌ ♀ ☾ . . . . . ♀ +	6	27
April	5	7	58	☌ ☿ ☉ Inf.		
	5	8	54	☌ ♅ ☾ . . . . . ♅ —	4	13
	7	0	10	☌ ♃ ☾ . . . . . ♃ —	4	14
April	7	21	44	♅ stationary.		
	13	14	10	♀ stationary.		
	13	16	38	☌ ♂ ☾ . . . . . ♂ +	0	23
	14	23	53	☿ in ☋		
	15	5	21	☌ ♆ ☉		
	16	18	8	♃ stationary.		
	17	17	22	☿ stationary.		
	19	14	27	☌ ♄ ☾ . . . . . ♄ +	4	46
	21	4	31	□ ♅ ☉		
	21	19	8	□ ♄ ☉		
	24	8	49	☌ ☿ ☾ . . . . . ☿ +	1	44
	25	4	17	☿ in Aphelion.		
	25	11	33	☌ ♆ ☾ . . . . . ♆ +	0	52
	26	21	30	☍ ♂ ☉		
	27	1	14	☌ ♀ ☾ . . . . . ♀ +	6	28
May	2	17	17	☌ ♅ ☾ . . . . . ♅ —	4	22
	3	8	10	☿ greatest elong. W.	26	37
	4	8	22	☌ ♃ ☾ . . . . . ♃ —	4	24
	5	0	48	☌ ♀ ☉ Inf.		
	10	5	32	☌ ♂ ☾ . . . . . ♂ —	1	41
	11	–	–	☾ eclipsed, vis. at Wash.		
	11	8	17	☌ ♆ ☿ . . . . . ♆ +	1	27
	11	15	45	♄ stationary.		
	12	11	45	□ ♃ ☉		
	15	14	11	☿ greatest Hel. Lat. S.		
	16	20	27	☌ ♄ ☾ . . . . . ♄ +	4	47
	18	12	57	☌ ☿ ♀ . . . . . ☿ —	3	55
	19	10	54	♂ in ☋		
	22	21	15	☌ ♆ ☾ . . . . . ♆ +	0	47
	23	13	46	☌ ♀ ☾ . . . . . ♀ +	1	47
	24	1	16	♀ in ☋		
	24	8	27	☌ ☿ ☾ . . . . . ☿ —	1	10
	24	15	42	♀ stationary.		
	25	–	–	☉ eclipsed, invis. at Wash.		
	30	3	21	☌ ♅ ☾ . . . . . ♅ —	4	24
	31	21	15	☌ ♃ ☾ . . . . . ♃ —	4	28
June	3	14	1	☿ in ☊		
	6	4	7	☌ ♂ ☾ . . . . . ♂ —	3	20
	6	4	28	♂ stationary.		
	8	3	54	☿ in Perihelion.		
	8	16	14	☌ ☿ ☉ Sup.		
	10	–	–	♀ greatest brilliancy.		
	13	1	42	☌ ♄ ☾ . . . . . ♄ +	4	39
	18	11	27	☿ greatest Hel. Lat. N.		
	19	4	41	☌ ♆ ☾ . . . . . ♆ +	0	37
	20	16	6	☌ ♀ ☾ . . . . . ♀ —	2	50
	20	16	17	☉ enters ♋, summer com.		
	25	17	11	☌ ☿ ☾ . . . . . ☿ —	2	35
	26	13	52	☌ ♅ ☾ . . . . . ♅ —	4	22
	27	15	56	♀ in Aphelion.		
	28	13	10	☌ ♃ ☾ . . . . . ♃ —	4	25
	30	11	25	☉ in Apogee.		

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
July	2	15	49	☌ ☿ ♅ ..... ☿ +	0	47
	3	21	43	☌ ♂ ☾ ..... ♂ −	3	31
	10	7	45	☌ ♄ ☾ ..... ♄ +	4	27
	11	23	8	☿ in ☋		
	14	3	0	♀ greatest elong. W.	45	44
	15	15	26	☿ greatest elong. E.	26	45
	16	10	59	☌ ♆ ☾ ..... ♆ +	0	21
	19	19	50	☌ ♀ ☾ ..... ♀ −	5	8
	19	21	45	♀ greatest Hel. Lat. S.		
	20	14	36	□ ♆ ☉		
	21	12	1	☍ ♄ ☉		
	22	3	32	☿ in Aphelion.		
	23	23	56	☌ ♅ ☾ ..... ♅ −	4	21
	25	14	55	☌ ☿ ☾ ..... ☿ −	8	19
	26	6	35	☌ ♃ ☾ ..... ♃ −	4	14
	28	14	18	☌ ♅ ☉		
	28	20	14	☿ stationary.		
	31	18	45	♆ stationary.		
Aug.	1	5	15	☌ ♂ ☾ ..... ♂ −	2	32
	6	15	0	☌ ♄ ☾ ..... ♄ +	4	21
	11	13	26	☿ greatest Hel. Lat. S.		
	11	16	4	□ ♂ ☉		
	12	14	10	☌ ☿ ☉ Inf.		
	12	17	46	☌ ♆ ☾ ..... ♆ +	0	3
	18	11	3	☌ ♀ ☾ ..... ♀ −	5	47
	20	9	10	☌ ♅ ☾ ..... ♅ −	4	26
	20	22	48	☌ ☿ ☾ ..... ☿ −	8	5
	21	18	57	☿ stationary.		
	23	0	37	☌ ♃ ☾ ..... ♃ −	4	2
	29	20	14	☌ ♂ ☾ ..... ♂ −	0	52
	29	21	29	☿ greatest elong. W.	18	8
	30	13	15	☿ in ☊		
Sept.	2	22	51	☌ ♄ ☾ ..... ♄ +	4	24
	3	21	19	☌ ♃ ☉		
	4	3	9	☿ in Perihelion.		
	9	2	7	☌ ♆ ☾ ..... ♆ −	0	10
	9	14	26	☌ ♀ ♅ ..... ♀ −	1	0
	14	4	51	♀ in ☊		
	14	10	42	☿ greatest Hel. Lat. N.		
	14	15	34	☌ ☿ ♃ ..... ☿ +	0	54
	16	17	47	☌ ♅ ☾ ..... ♅ −	4	36
	17	11	21	☌ ♀ ☾ ..... ♀ −	5	10
	19	18	51	☌ ♃ ☾ ..... ♃ −	3	49
	20	15	30	☌ ☿ ☾ ..... ☿ −	2	36
	22	6	27	☉ enters ♎ autumn com.		
	24	9	26	☌ ☿ ☉ Sup.		
	27	14	15	☌ ♂ ☾ ..... ♂ +	0	57
	29	14	48	♄ stationary.		
	30	6	31	☌ ♄ ☾ ..... ♄ +	4	33
Oct.	6	11	45	☌ ♆ ☾ ..... ♆ −	0	14
	7	22	24	☿ in ☋		
	14	2	15	☌ ♅ ☾ ..... ♅ −	4	46
	14	8	20	☌ ♀ ♃ ..... ♀ +	0	21
	17	13	5	☌ ♃ ☾ ..... ♃ −	3	33
	17	20	37	♀ in Perihelion.		
	17	20	45	☌ ♀ ☾ ..... ♀ −	2	53
	18	2	48	☿ in Aphelion.		
	19	0	10	□ ♄ ☉		
	19	18	3	☍ ♆ ☉		
	22	5	42	☌ ☿ ☾ ..... ☿ −	1	31
	23	3	33	♂ greatest Hel. Lat. S.		
	26	8	51	☌ ♂ ☾ ..... ♂ +	2	33
	27	13	56	☌ ♄ ☾ ..... ♄ +	4	40
Nov	2	2	15	□ ♅ ☉		
	2	21	12	☌ ♆ ☾ ..... ♆ −	0	9
	4	-	-	☾ eclipsed, invis. at Wash.		
	7	12	41	☿ greatest Hel. Lat. S.		
	8	16	34	♀ greatest Hel. Lat. N.		
	9	22	11	☿ greatest elong. E.	22	50
	10	10	53	☌ ♅ ☾ ..... ♅ −	4	49
	14	6	49	☌ ♃ ☾ ..... ♃ −	3	12
	15	0	49	♅ stationary.		
	16	2	51	♂ in Perihelion.		
	17	10	12	☌ ♀ ☾ ..... ♀ +	0	28
	19	-	-	☉ eclipsed, invis. at Wash.		
	19	18	34	☌ ♂ ♄ ..... ♂ −	1	8
	20	1	57	☿ stationary.		
	20	21	56	☌ ☿ ☾ ..... ☿ +	1	13
	23	22	19	☌ ♄ ☾ ..... ♄ +	4	41
	24	3	22	☌ ♂ ☾ ..... ♂ +	3	42
	26	12	30	☿ in ☊		
	30	1	16	☌ ☿ ☉ Inf.		
	30	4	52	☌ ♆ ☾ ..... ♆ −	0	6
Dec.	1	2	25	☿ in Perihelion.		
	7	19	19	☌ ♅ ☾ ..... ♅ −	4	42
	9	17	15	☿ stationary.		
	10	4	57	☌ ☿ ♀ ..... ☿ +	1	52
	11	9	58	☿ greatest Hel. Lat. N.		
	11	22	45	☌ ♃ ☾ ..... ♃ −	2	43
	17	8	59	☌ ☿ ☾ ..... ☿ +	4	14
	17	19	18	☌ ♀ ☾ ..... ♀ +	3	3
	18	17	34	♀ greatest elong. W.	21	46
	21	0	24	☉ enters ♑, winter com.		
	21	9	18	☌ ♄ ☾ ..... ♄ +	4	38
	21	20	8	□ ♃ ☉		
	22	22	20	☌ ♂ ☾ ..... ♂ +	4	10
	27	10	35	☌ ♆ ☾ ..... ♆ −	0	12

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(*North Latitudes and West Longitudes are considered as positive.*)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Days.	Longitude from Washington in Arc.
	° ′ ″	h m s	d	° ′ ″
Åbo, ...	+60 26 56.8	— 6 37 20.32	—.2759296	260 39 55.2
Albany, ...	+42 39 49.5	— 0 13 12.87	—.0091767	356 41 47.0
Allegheny, . . .	+40 27 36.0	+ 0 11 50.66	+.0082252	2 57 39.9
Altona, ...	+53 32 45.3	— 5 47 58.54	—.2416498	273 0 21.9
Ann Arbor, . . .	+42 16 48.0	+ 0 26 42.67	+.0185494	6 40 40.0
Armagh, ...	+54 21 12.7	— 4 41 36.92	—.1955662	289 35 46.2
Athens, ...	+37 58 20.0	— 6 43 7.58	—.2799488	259 13 6.3
Berlin, ...	+52 30 16.7	— 6 1 47.77	—.2512473	269 33 3.4
Bilk, ...	+51 12 25.0	— 5 35 17.77	—.2328445	276 10 33.4
Bonn, ...	+50 43 45.0	— 5 36 36.02	—.2337502	275 50 59.7
Breslau, ...	+51 6 56.5	— 6 16 22.19	—.2613679	265 54 27.1
Brussels, ...	+50 51 10.7	— 5 25 41.29	—.2261723	278 34 40.7
Cambridge, (Eng.,)	+52 12 51.8	— 5 8 35.08	—.2142949	282 51 13.8
Cambridge, (Mass.,)	+42 22 48.1	— 0 23 41.54	—.0164530	354 4 36.9
Cape of Good Hope,	—33 56 3.2	— 6 22 8.09	—.2653711	264 27 58.7
Chicago, ...	+41 50 1.0	+ 0 42 14.26	+.0293317	10 33 33.9
Cincinnati, . . .	+39 6 26.5	+ 0 29 46.94	+.0206822	7 26 44.1
Christiania, . . .	+59 54 43.7	— 5 51 6.69	—.2438274	272 13 19.6
Clinton, ...	+43 3 16.5	— 0 6 35.08	—.0045727	358 21 13.8
Copenhagen, . . .	+55 41 13.6	— 5 58 31.05	—.2489703	270 22 14.3
Cracow, ...	+50 3 50.0	— 6 28 2.80	—.2694768	262 59 18.0
Dorpat, ...	+58 22 47.0	— 6 55 6.02	—.2882641	256 13 29.7
Dublin, ...	+53 23 13.0	— 4 42 50.39	—.1964165	289 17 24.1
Durham, ...	+54 46 6.4	— 5 1 52.64	—.2096370	284 31 50.4
Edinburgh, . . .	+55 57 23.2	— 4 55 29.31	—.2052007	286 7 39.9
		+ 24 02.7		
Florence, ...	+43 46 40.8	— 5 53 15.12	—.2453139	271 41 13.2
Geneva, ...	+46 11 58.8	— 5 32 49.24	—.2311314	276 47 41.4
Georgetown, . . .	+38 54 26.2	+ 0 0 6.20	+.0000718	0 1 33.0
Göttingen, . . .	+51 31 47.8	— 5 47 58.49	—.2416492	273 0 22.7
Gotha, ...	+50 56 37.5	— 5 51 3.39	—.2437892	272 14 9.2
Greenwich, . . .	+51 28 38.2	— 5 8 12.39	—.2140323	282 56 54.2
Hamburg, . . .	+53 33 7.0	— 5 48 5.95	—.2417355	272 58 30.8
Helsingfors . . .	+60 9 42.6	— 6 48 1.32	—.2833486	257 59 10.2
Hudson, ...	+41 14 42.6	+ 0 17 32.06	+.0121766	4 23 0.9
Kasan, ...	+55 47 24.2	— 8 24 41.14	—.3501761	233 49 12.9
Königsberg, . . .	+54 42 50.6	— 6 30 11.87	—.2709707	262 27 2.0
Kremsmünster, . .	+48 3 23.7	— 6 4 45.03	—.2532990	268 48 41.6
Leipsic, ...	+51 20 6.3	— 5 57 46.87	—.2484592	270 33 17.0
Leyden, ...	+52 9 20.3	— 5 26 8.57	—.2264881	278 27 51.5
Liverpool, . . .	+53 24 47.7	— 4 56 12.31	—.2056984	285 53 51.9
Madras, ...	+13 4 9.2	—10 29 9.67	—.4369175	202 42 35.0
Mannheim, . . .	+49 29 12.9	— 5 42 3.06	—.2375351	274 29 14.1
Markree, ...	+54 10 31.8	— 4 34 24.00	—.1905556	291 24 0.0

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Days.	Longitude from Washington in Arc.
	° ′ ″	h m s	d	° ′ ″
Marseilles, . . .	+43 17 49.0	— 5 29 40.55	—.2289415	277 34 51.8
Milan, ...	+45 28 0.7	— 5 44 58.20	—.2395625	273 45 27.0
Modena, ...	+44 38 52.8	— 5 51 55.53	—.2443927	272 1 7.1
Moscow, ...	+55 45 19.8	— 7 38 29.29	—.3183946	245 22 40.7
Munich, ...	+48 8 45.0	— 5 54 38.00	—.2462731	271 20 30.0
Naples, ...	+40 51 46.6	— 6 5 10.95	—.2535990	268 42 15.8
New York, . . .	+40 43 48.5	— 0 12 15.47	—.0085124	356 56 8.0
Nicolajew, . . .	+46 58 20.6	— 7 16 6.53	—.3028534	250 58 22.1
Olmütz, ...	+49 35 43.0	— 6 17 15.43	—.2619841	265 41 8.6
Oxford, ...	+51 45 35.5	— 5 3 9.79	—.2105300	284 12 33.2
Padua, ...	+45 24 2.5	— 5 55 41.17	—.2470043	271 4 42.5
Palermo, ...	+38 6 44.0	— 6 1 37.00	—.2511227	269 35 45.0
Paramatta, . . .	—33 48 49.8	—15 12 18.64	—.6335491	131 55 20.4
Paris, ...	+48 50 11.0	— 5 17 33.02	—.2205211	280 36 44.7
Philadelphia, . . .	+39 57 7.5	— 0 7 33.64	—.0052505	358 6 35.4
Prague, ...	+50 5 18.5	— 6 5 53.52	—.2540917	268 31 37.2
Pulkowa, ...	+59 46 18.1	— 7 9 31.06	—.2982757	252 37 14.1
Rome, ...	+41 53 53.7	— 5 58 8.53	—.2487098	270 27 52.1
San Fernando, . .	+36 27 45.0	— 4 43 22.42	—.1967873	289 9 23.7
Santiago, ...	—33 26 42.0	— 0 25 30.00	—.0177083	353 37 30.0
Senftenberg, . . .	+50 5 10.1	— 6 14 3.00	—.2597570	266 29 15.0
Speyer, ...	+49 18 55.4	— 5 41 58.00	—.2374769	274 30 30.0
Stockholm, . . .	+59 20 33.8	— 6 20 26.35	—.2641939	264 53 24.7
St. Petersburg, . .	+59 56 29.7	— 7 9 25.87	—.2982161	252 38 32.0
Upsala, ...	+59 51 31.5	— 6 18 42.70	—.2629942	265 19 19.5
Utrecht, ...	+50 5 10.5	— 5 28 43.67	—.2282832	277 49 5.0
Vienna, ...	+48 12 35.5	— 6 13 44.09	—.2595381	266 33 58.7
Washington, . . .	+38 53 38.8	0 0 0.00	.0000000	0 0 0.0
Wilna, ...	+54 50 59.1	— 6 49 23.33	—.2842978	257 39 10.1

The authorities for these positions are given in the volumes for 1871 and 1872.

By a more recent telegraph determination, made by the *United States Coast Survey* in 1867, Cambridge, Mass., is East of Washington $0^h\ 23^m\ 41^s.08$, instead of $0^h\ 23^m\ 41^s.54$.

The correction, therefore, to be applied to the longitudes of the preceding table, except those of Albany, Cincinnati, Georgetown, Hudson, New York, Philadelphia, and Washington, is $+0^s.46 = +0^d.0000053 = +6''.9$.

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

This Ephemeris is divided into two distinct parts. One part is designed for the special use of Navigators, and therefore adapted to the Meridian of Greenwich.

The other part is suited to the convenience of Astronomers, on this continent particularly, and adapted to the Meridian of Washington.

THE NAUTICAL PART.

This part contains the Ephemeris of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain Fixed Stars; the Ephemeris of the planets Venus, Mars, Jupiter, and Saturn; and the Mean Places of 198 principal Fixed Stars for the beginning of the year 1873.

Time.—Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time.—Sidereal Time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted. This point is the vernal equinox, and its hour angle is called the *Sidereal Time.* Astronomical clocks are regulated to sidereal time.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian.

The vernal equinox is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time, and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the sidereal time in common use might therefore be called *Apparent Sidereal Time;* and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2^{\mathrm{s}}.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Solar Time.—Solar Time is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun*, is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motion of this *Mean Sun;* the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it. The clocks in ordinary use, and chronometers used by Navigators, are regulated to *mean* time.

True or *Apparent Time* is measured by the motion of the real sun.

The difference between the *apparent* and *mean* time is called the *Equation of Time.* By means of it we pass from *apparent* to *mean* time, or the reverse. Thus, if the *apparent* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *apparent* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

Day.—The *civil day*, according to the customs of society, commences at midnight, and comprises twenty-four hours from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each; the first of which is marked A. M., the last is marked P. M.

The *astronomical day* commences at noon of the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical, as well as the civil, time may be either *apparent*, or *mean*, according as it is reckoned from *apparent* noon, or from *mean* noon.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day.* Thus, January 9th, 2^h A. M., *civil time*, is January 8th, 14^h, *astronomical time;* and January 9th, 2^h P. M., *civil time*, is also January 9th, 2^h, *astronomical time.* The rule, then, for the transformation of the civil time into astronomical time is this: If the civil time is marked A. M., take one from the date, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

If the longitude be expressed in time, and, when it is *west, added* to the local time, or, when it is *east, subtracted* from the local time, the result is the corresponding Greenwich time. If the local astronomical time is used, the result is the *Greenwich astronomical time*, which ordinarily is required for the use of this Part of the Ephemeris.

THE CALENDAR.—The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:

Page I. contains the *Apparent Right Ascension and Declination* of the Sun and the *Equation of Time* for each Greenwich *apparent* noon. Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of the quantity for a given *Greenwich apparent time.* The hourly differences are given for the instant of apparent noon at Greenwich, and, when great accuracy is required, should be first interpolated for *half* the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is 0. The longitude from Greenwich expressed in time, if *west*, is at that instant the Greenwich apparent time, or time *after* Greenwich apparent noon;—if *east*, it is time *before* Greenwich apparent noon;—and may be employed in reducing the quantities on this page to apparent noon at any place.

The Right Ascension of the sun thus reduced is the *Sidereal Time of Local Apparent Noon.* The difference between it and the clock time of the meridian passage of the sun is the error of the clock on *sidereal* time.

The Declination of the sun reduced to the meridian, or apparent noon, of the place, is needed in finding the latitude from a meridian altitude of the sun.

As an example of the use of this page, let the sun's declination be required at noon of July 3d, 1873, in longitude 146° 4′ W., or $+ 9^h\ 44^m\ 16^s$. We first find—

	″	° ′ ″
For July 3d, at Greenwich *apparent* noon, ☉'s declination		=22 57 16.8 N.
The diff. for 1 hour, −12″.38, multiplied by 9, is	111.42	
The proportional part for $30^m = \frac{1}{2}^h$,	6.19	
" " " $12^m = \frac{1}{5}^h$,	2.48	
" " " $2^m = \frac{1}{30}^h$,	.41	
" " " $15^s = \frac{1}{8}$ of 2^m	.05	
The sum to be subtracted,	120.55 or	2 0.5 S.
The sun's declination required,		22 55 16.3 N.

The longitude $9^h\ 44^m\ 16^s = 9^h\ 44^m.27 = 9^h.738$; and $12''.38 \times 9.738 = 120''.56 = 2'\ 0''.56$; which is also the reduction obtained in another way.

If the longitude is 146° 4′ E., the reduction, 2′ 0″.5, should be added, and the resulting declination becomes 22° 59′ 17″.3 N.

If greater precision is required, the hourly difference may be first interpolated for $4^h\ 52^m$ (or half the longitude) *after* noon for the *west* longitude, or for $4^h\ 52^m$ *before* noon for the *east* longitude. This will give, in the first case, the hourly difference 12″.58, and the resulting declination 22° 55′ 14″.3 N.; and, in the second case, the hourly difference 12″.18, and the declination 22° 59′ 15″.4 N.

At sea, however, it is ordinarily sufficient to have the declination to the nearest half minute; and the reduction may be found by Table V. of Bowditch's *American Practical Navigator.*

The *Equation of Time*, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent* time, or the time given by an observation of the sun, to obtain the *mean* time. The heading of the column directs the manner in which the equation is to be applied. Where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. As given on page I. the equation of time is also the *mean* time of *apparent* noon.

On page I. are also given the *Sun's Semidiameter*, which is used in reducing the altitude of a limb of the sun, or the angular distance of the limb from the moon or some other object, to the altitude, or distance, of the centre of the sun; and the *Sidereal Time of the Semidiameter passing the Meridian*, which is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the *first*, or western, limb, to be subtracted from the time of transit of the *second*, or eastern, limb.

Page II. contains for each Greenwich *mean* noon the *Apparent Right Ascension* and *Declination of the Sun*, the *Equation of Time*, and the *Sidereal Time of Mean Noon.* The hourly changes of these quantities are also given for noon, and may be used in reducing them to any given Greenwich *mean* time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required.

The Right Ascension and Declination on pages I. and II. are affected by *Aberration*, and therefore denote the *apparent* position of the *true* sun. Page II. is more conveniently used when the *mean* time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to *mean* time. The quantities can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the local time from observations of the sun, and the latitude from other than meridian observations. The heading of the column directs the manner in which it is to be applied to *mean* time to obtain the *apparent* time.

As given on page II., the equation when *additive* is the apparent time of mean noon; and in general it is the hour angle of the *true* sun at the instant of *mean* noon.

The *Sidereal Time of Mean Noon* is also the ***Right Ascension of the Mean Sun.*** It may be reduced for the longitude, or to any Greenwich *mean* time, by using the hourly difference, $9^s.8565$; or by Table III. in the appendix of the *American Ephemeris* for *reducing intervals of mean solar to sidereal time.* Table LI. of Bowditch's *Navigator* may be used for the same purpose when the nearest quarter of a second only is required.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting solar time to sidereal time. If we add the right ascension of the *true* sun to the *apparent* time, or the right ascension of the ***mean*** sun to the *mean* time, the result will be the *sidereal* time.

The sidereal time of mean noon is also used in converting sidereal time to mean time, by first reducing it for the longitude of the place. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a ***sidereal interval to a mean time interval*** in Table II. of the *American Ephemeris*, or Table LII. of Bowditch's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^s.8296$ by the hours and parts of an hour of the given *sidereal* time.

As examples of the use of page II. :—

1. Let the sun's right ascension and the equation of time be required for 1873, July 5, 6^h 12^m 13^s A. M. mean time at a place whose longitude is 118° 14′ E.

	h m s
The local astronomical *mean* time is	July 4, 18 12 13
The longitude in time,	— 7 52 56
The Greenwich *mean* time,	July 4, 10 19 17
	or July 4, 10.3214

	Sun's R. A. h m s		*Equation of time.* m s
July. 4, *Noon,*	6 54 20.79	July 4, *Noon,*	4 5.42 *Subtractive.*
H. D. $10^s.299 \times 10.3214$	+ 1 46.30	H. D. $+ 0^s.443 \times 10.3214 =$	+ 4.57
	6 56 7.09		4 9.99

If greater precision is required, the hourly differences interpolated to $5^h.2$, or $10^s.296$ for the right ascension, and $0^s.440$ for the equation of time, should be used.

The equation of time in this example is *subtractive from* mean time. Its reduction could have been found by Table VI. A. of Bowditch's *Navigator* to seconds only.

2. If the sidereal time is required for the same date and time, we have—

	h m s
July 4, *Noon,* the R. A. of the mean sun is	6 50 15.37
Add the H. D. $9^s.8565 \times 10.3214$, or	+ 1 41.73
Add the local *astronomical* mean time	18 12 13.00
The required sidereal time is, (rejecting 24^h,)	1 4 10.10

The reduction 1^m $41^s.73$ could have been found in Table III. corresponding to the Greenwich mean time, 10^h 19^m 17^s. By Table LI. of Bowditch's *Navigator*, the reduction is 1^m $41^s.7$.

3. 1873, July **5, A. M.,** at a place whose longitude is **118° 14′ E.,** suppose the sidereal time to be **$1^h\ 4^m\ 10^s.10$,** and that the corresponding mean time is required.

The astronomical day is July 4; the longitude in time — $7^h\ 52^m\ 56^s$, or — $7^h.882$.

	h	m	s	
July 4, the sidereal time of Greenwich mean noon is	6	50	15.37	
The H. D. $9^s.8565$ × (— 7.882), or the red. for $7^h\ 52^m\ 56^s$ in Table III.	—	1	17.69	
The sidereal time of local noon,	6	48	57.68	
The given sidereal time + 24^h,	25	4	10.10	
Subtracting the first from the second gives the *sidereal interval* from noon	18	15	12.42	= $18^h.254$
— $9^s.8236$ × 18.254, or the red. for $18^h\ 15^m\ 12^s$ in Table II.,	—	2	59.42	
The required astronomical mean time, July 4,	18	12	13.00	

Page III. contains the *Longitude* and *Latitude of the Sun*, and the *Logarithm of its Distance from the Earth*, at Greenwich Mean Noon of each day. The Longitude is given in two columns, headed λ and λ'; λ representing the sun's longitude counted from the true equinox of the date; and λ' the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The longitudes of the sun are the true longitudes, not affected by aberration. The latitude is referred to the ecliptic of the date.

The last column on page III. contains the *Mean Time of Sidereal* 0^h, or 24^h—the right ascension of the mean sun. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich *sidereal* time by means of the hourly difference,—$9^s.8296$. The reduction, however, can be taken directly from Table II. of the American Ephemeris, for *reducing intervals of sidereal time to mean solar time*, or approximately, from Table LII. of Bowditch's *Navigator*.

This column is used in converting sidereal time to mean time. As an illustration let us take Example 3 above.

	h	m	s	
July 4, the mean time of Greenwich sidereal 0^h is	17	6	55.93	
The H. D. — $9^s.8296$ × (— 7.882), or the red. for long., Table II.,	+	1	17.48	
The mean time of local sid. 0^h,	17	8	13.41	
Add the given sidereal time,	1	4	10.10	= $1^h.070$
The sum is	18	12	23.51	
— $9^s.8296$ × 1.070, or the red. for $1^h\ 44^m\ 10^s$ in Table II.,	—		10.51	
The required astronomical mean time, July 4,	18	12	13.00	

It was readily seen in advance that the sum of the mean time of sidereal 0^h and the given sidereal time would be less than 24^h. Were it more than 24^h, the mean time of sidereal 0^h should be taken out for July 3, that is the *preceding* astronomical day.

Page IV. contains the *Moon's Semidiameter* and *Equatorial Horizontal Parallax* for every mean noon and midnight at Greenwich. Columns adjoining those of the Horizontal Parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time in the same way as the sun's declination and the equation of time in the preceding examples. The sign *plus* or *minus* (+ or —) prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.273. It also may be obtained from Table XI. of Bowditch's *Navigator*, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1873, April 1, 9^h P. M. Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of April 1 is $7''.3$; then as $12^h : 9^h = 7''.3 : 5''.5$

which is the correction to be ***subtracted from*** the semidiameter at noon, because the semidiameter is *decreasing*. The moon's semidiameter then, for April 1, 9^h, is $15'\ 39''.6 - 5''.5$, or $15'\ 34''.1$.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for *half* the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Meridian Passage* at Greenwich, which is given on page IV. to minutes and tenths of minutes, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. The reduction may be taken from Bowditch's Table XXVIII. by simple inspection. The last column of this page contains the *Age* of the Moon, or the time elapsed since the preceding new moon, to tenths of days.

Pages V. to XII., inclusive, contain the *Moon's Right Ascension* and *Declination* for each day and hour of Greenwich *mean* time. They are accompanied with columns of *differences for one minute*, which are also given at each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. These quantities are wanted for Greenwich mean time, which is either taken directly from a well-regulated chronometer, or is obtained by applying the longitude, turned into time, to the local mean time of the observer. Each is taken out for the day and hour of the Greenwich *mean* time; the *diff. for* 1^m multiplied by the *minutes* and parts of a minute of the Greenwich time; and the product added to, or subtracted from, the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1873, July 7, 15^h 15^m 20^s, astronomical mean time at Greenwich:

	Right Ascension.		*Declination*
	h m s		° ′ ″
July 7, 15^h	17 3 50.60		24 57 1.8 S.
Diff. $2^s.5162 \times 15.333$	= + 38.58	$6''.154 \times 15.333$ =	1 34.4 S.
July 7, 15^h 15^m 20^s	17 4 29.18		24 58 36.2 S.

The differences interpolated for $7^m.67 = 0^h.13$ are for the right ascension $2^s.5172$, and for the declination $16''.134$, which may be used for greater precision.

Page XII. contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII. to XVIII., inclusive, contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, the four larger planets, and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore *astronomical*. All the distances that can be observed on the same day are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W., or E., is affixed to the name of the sun, planet, or star, to indicate that it is on the west, or east, side of the moon.

An observer on the earth's surface having measured a *Lunar Distance*, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the *true*, or *geocentric*, distance. With this distance and the distances in the Ephemeris of the same bodies on the same day, the *Greenwich mean time* of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris between every two successive distances the *logarithm of the seconds of time in which the distance changes* 1″, or, as it is usually called, the *proportional logarithm of the difference.* It is given for the *middle* instant of the two dates between which it is placed.

For computing the *Greenwich time* we have the following rule:

Find in the Almanac the two distances between which the true distance falls; take out the nearest of these, the hours of Greenwich time over it, and the *P. L. of Diff.* between them:

Find the difference between the true distance and the distance taken from the Almanac; and from the *proportional logarithm* of this difference subtract the *P. L. of Diff.* taken from the Almanac:

The result is the *proportional logarithm* of an interval of time to be *added* to the hours of Greenwich time, taken from the Almanac, when the *earlier* Almanac distance is used; to be *subtracted* from the hours of Greenwich time, when the *later* Almanac distance is used.

Or, we may *add* the *common logarithm* of the difference of the true and the Almanac distances to the *P. L. of Diff.* of the Almanac; and the sum will be the *common logarithm* of the correction to be applied to the hours of Greenwich time. The Table of *Logarithms of small Arcs in Space or Time,* given at the end of the volume for 1871, saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the *P. L. of Diff.* in the Ephemeris varies, the Greenwich time, found by the methods just described, may not be sufficiently exact. To correct it for such variation, or *2d difference*, take the difference between the *P. L. of Diff.* used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones.) With this difference, and the first correction of the Greenwich time already found, enter Table I. Appendix, and take out the corresponding seconds, which are to be *added* to the approximate Greenwich time if the *Prop. Logs.* in the Ephemeris are *decreasing;* to be *subtracted* if they are *increasing.*

Thus the *Greenwich mean time* of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer time and the Greenwich mean time will be the *error* of the chronometer as found from the Lunar Distance. The agreement or disagreement of this error with that brought up from the error and rate of a previous date, may show whether the chronometer has run well or ill. In this way Lunar Distances can be used as a check upon the chronometer. By a series of carefully observed Lunar Distances on both sides of the moon, the chronometer error can be tolerably well ascertained.

If the observer has found the *local mean time* of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the Lunar Distance will be his longitude.

As an example of finding the Greenwich mean time from a Lunar Distance, suppose that in 1873, Jan. 6, about 16h of Greenwich astronomical time, the corrected distance of the moon's centre from *a* Tauri (*Aldebaran*) is 35° 17′ 43″:

Corrected distance,		35° 17′ 43″		
Distance in the Ephemeris, Jan. 6, 15h 0m 0s		35 52 31	P. L.	.2680
Difference,		34 48	P. L.	.7137
Time from 15h (*after*)	+ 1 4 30		P. L.	.4457
Corr. for 2d Diff., Table I.,	− 5	Diff. of P. Logs.		+ 19
Greenwich Mean Time, Jan. 6	16 4 25			

By a Table of common logarithms, or a Table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:

P. L. from Ephemeris,			0.2680
Diff. of distances,	34′ 48″ = 2088″	log	3.3197
Red. of Greenwich time, + 1h 4m 30s = 3870s		log	3.5877

the result being the same as by the previous method

Pages 218 to 241, inclusive, contain the Ephemerides of the four principal planets, Venus, Mars, Jupiter, and Saturn. The Ephemeris of each consists of its *apparent right ascension* and *declination*, and their *variations in one hour*, for each Greenwich mean noon; the *mean time of meridian passage;* and, at the bottom of the page, the *semidiameter* and *horizontal parallax*.

North declinations are marked +, south declinations —. + prefixed to the hourly change of declination of the sun, moon, or a planet, indicates that north declinations are increasing, and south declinations are decreasing; — indicates that north declinations are decreasing, south declinations increasing.

The right ascension and declination are needed in all observations of the planet for time, latitude, or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples of the sun previously given. The mean time of passage across any meridian can be found by dividing the *daily* difference by 24, and using the *hourly* difference thus obtained, as in the case of the moon; or, the reduction can be found by the proportion: As 24^h (or 360°) is to the longitude, so is the daily difference to the reduction required.

Pages 242 to 244 contain the Sun's *Rectangular* Coördinates referred to the equator and equinox of the date. They were employed in computing the Ephemeris of the Planets. The day of the year, or number of days from January 0, is also given.

Pages 245 to 248 contain the Moon's *true Longitude and Latitude* for each Greenwich mean noon and midnight. The right ascensions and declinations of the moon have been computed from them.

Pages 261 to 264 contain the *Mean Places*, with their *annual variations*, of one hundred and ninety-eight Fixed Stars for the beginning of the year **1873**. North declinations are marked +; south declinations —.

The right ascension of a star is also the *sidereal time* of its meridian passage. From this we may roughly find the mean time of meridian passage by adding the *mean time of sidereal* 0^h on page III. of the Calendar, or subtracting the *sidereal time of mean noon* on page II., (disregarding seconds;) but we can find it more exactly by the processes already given for converting sidereal time to mean time.

The right ascension and declination of a star are generally needed in observations of it for time, latitude, or azimuth. The mean places are sufficiently accurate for most observations at sea; but for more exact observations, the *apparent* places given in the larger Ephemeris should be used.

THE ASTRONOMICAL PART.

This part is adapted to the meridian of Washington; and Washington time, *astronomical* or *sidereal*, is required in its use. The longitude of Washington from Greenwich is assumed to be $+5^h\ 8^m\ 12^s$.

Obliquity of the Ecliptic, &c., page 250.—This page contains for every ten days of the year the *Apparent Obliquity*, which is required for the transformation of longitudes and latitudes to right ascensions and declinations, or the reverse; the *Equation of Equinoxes* in longitude and right ascension, or the reduction from the *mean* to the *true* equinox of the date; the *Precession of Equinoxes* in longitude, or the reduction of longitudes from the mean equinox of the *beginning* of the year to the mean equinox of the *date;* the *Sun's Aberration*, which is to be applied to the *true* longitude of the sun, as given in the Ephemeris, to obtain its *apparent* longitude; the *Sun's Horizontal Parallax;* and the *Mean Longitude of the Moon's Ascending Node.*

At the bottom of the page are given the *Mean Obliquity* for the beginning of the year; the *Annual Precession* for the middle of the year, the precession in a sidereal and in a solar day, and the *daily motion* of the moon's node in longitude.

Fixed Stars.—Pages 251–259 contain for each mean midnight the logarithms of A, B, C, D, also f, G, H, i, and logarithms of g, h, and i, (following BESSEL's notation), for reducing the *mean* places of the Fixed Stars at the beginning of the year to their *apparent* places on any day.

The formulæ from which they are derived, and those in which they are used, are given on page 260. The coefficients are those of PETERS and STRUVE. For terms in right ascension, except the small terms at bottom of page 260, they are expressed in time.

The first set of quantities require for the star the logarithms of a, b, c, d, a', b', c', d', which are to be found in the Star Catalogues. The other set require no other star constants than the right ascensions and declinations. f, G, and H are given in time, as well as arc, to facilitate their use with tables of sines, &c., which have the argument in time.

Tables IV., V., and VI., in the Appendix, give corrections of the apparent places of several circumpolar stars, and of the quantities A and B for small terms of nutation.

For a star near the pole, it is best to compute the reductions with the time constants and the mean right ascension and declination at the date, instead of the beginning of the year, (or the logarithms of a, b, c, &c., reduced to the date), and add such of the following terms as may be of sufficient magnitude:

In *Right Ascension.*

$$\left.\begin{array}{l} +0^s.000003\ \tau^2 \sin a \\ -0^s.000149\ \tau^2 \cos a \end{array}\right\} \tan \delta$$

$$\left.\begin{array}{l} -0^s.0000650\ \tau^2 \sin 2a \\ +0^s.0000103 \sin 2\text{☊} \cos 2a \\ -0^s.0000107 \cos 2\text{☊} \sin 2a \end{array}\right\} \tan^2 \delta$$

$$\left.\begin{array}{l} +0^s.0000620 \sin 2\odot \cos 2a \\ -0^s.0000622 \cos 2\odot \sin 2a \end{array}\right\} \sec^2 \delta$$

$$\left.\begin{array}{l} +0^s.0000513 \sin (\odot + \text{☊}) \cos 2a \\ -0^s.0000507 \cos (\odot + \text{☊}) \sin 2a \\ +0^s.0000097 \sin (\odot - \text{☊}) \cos 2a \\ -0^s.0000053 \cos (\odot - \text{☊}) \sin 2a \end{array}\right\} \tan \delta \sec \delta$$

In *Declination.*

$$\left.\begin{array}{l} +0''.000075\ \tau^2 \sin^2 a \\ -0''.000023 \cos 2\text{☊} \\ -0''.000080 \cos 2\text{☊} \cos 2a \\ -0''.000077 \sin 2\text{☊} \sin 2a \\ +0''.000040 \cos 2\odot \\ -0''.000467 \cos 2\odot \cos 2a \\ -0''.000465 \sin 2\odot \sin 2a \end{array}\right\} \tan \delta$$

$$\left.\begin{array}{l} -0''.00004 \cos (\odot + \text{☊}) \\ -0''.00038 \cos (\odot + \text{☊}) \cos 2a \\ -0''.00038 \sin (\odot + \text{☊}) \sin 2a \\ -0''.00038 \cos (\odot - \text{☊}) \\ -0''.00004 \cos (\odot - \text{☊}) \cos 2a \\ -0''.00007 \sin (\odot - \text{☊}) \sin 2a \end{array}\right\} \sin \delta \tan \delta$$

Pages 261–264 contain the *mean places* and *annual variations* of 198 Fixed Stars for 1873, Jan. $0^d-.438$, or the instant when the sun's mean longitude is 280°. τ on the preceding pages is reckoned from the same epoch. Stars within 25° of either pole are designated by a *.

The *apparent* places of α, δ, and λ Ursæ Minoris, and of 51 Cephei, are given on pages 265–276 for every upper transit at Washington. They include the terms depending on 2☾, as well as other small terms on pages 260 and 497, so far as they were of sufficient importance.

The *apparent* places of the remaining 194 stars follow on pages 277–325 in the order of their right ascensions. They are given for every tenth transit, together with *ten times* their *daily* motion at transit; and include all terms of the preceding formulæ exceeding 0^{s}.003 in right ascension, or 0$''$.03 in declination, except those which depend on 2☾ and ☾— l'. The mean solar time of transit is also given to the nearest tenth of a day.

Solar Ephemeris.—Pages 326–331 contain the *Apparent Right Ascension* and *Declination* of the SUN for each mean and apparent noon at Washington; the *Hourly Motion* at mean noon; the *Equation of Time* at apparent noon with the sign of its application to apparent time; the SUN's *Semidiameter* and the *Sidereal Time of its passing the Meridian;* and the *Sidereal Time of Mean Noon.* The explanation of these quantities and their use has already been given on pages 490–492.

The SUN's *Horizontal Parallax* is on page 250.

Moon Culminations.—Pages 332–334 contain the mean solar time of the *Upper Transit* of the MOON's *centre* at Washington, expressed to hundredths of a minute, the *difference for one hour* of longitude, and the *Sidereal Time of Semidiameter passing the Meridian*, both given for the instant of transit at Washington. The numbers in the fifth column indicate the four STARS in the list of *Moon Culminating Stars*, pages 335–338, the two preceding and the two next following the moon, proper to be observed with the moon at each transit. The *bright Limb* of the *Moon* is indicated by the Roman numerals in the last column.

The time of transit at any place, within six hours of Washington in longitude, may be found with sufficient accuracy from the time of the Washington transit by using the hourly difference interpolated for a longitude *half* that of the given place. With this time, reduced to Greenwich time, the moon's right ascension can be taken from the Lunar Ephemeris, pages V–XII of each month, as in the example on page 494. If greater precision is required, or the place is more than six hours from Washington, we may from the right ascension thus obtained, which is nearly the *local sidereal time*, find the *local mean time* (as on page 493) more accurately than before, and thence the *Greenwich mean time*, and with this revise the computation.

As an example, suppose the right ascension of the bright limb of the moon to be required at the transit of April 17, 1873, at Calcutta, in longitude

E. from Washington, 11^{h} 1^{m} 32^{s}=11^{h}.0255=0^{d}.4594.
E. from Greenwich, 5^{h} 53^{m} 20^{s}.

		h	m
Transit at Washington, (p. 332)	April 17,	16	34.86
Hourly motion,	—11.025×2^{s}.466= —		27.19
Transit at Calcutta,	April 17,	16	7.67
Longitude from Greenwich	—	5	53.33
Greenwich mean time	April 17,	10	14.34

		h	m	s
April 17, 10^{h} (p. 64), Moon's R. A.		17	51	29.65
Diff. for 1^{m}	2^{s}.5121×14.34= +			36.02
April 17, 10^{h} 14^{m}.34, Moon's R. A.		17	52	5.67
Sid. time of semidiam. passing, (p. 332)	+		1	13.71
R. A. of II, or bright limb, at its transit at Calcutta		17	53	19.38

The approximate Declination is — 26° 22′.

The above hourly motion, 2^{m}.466 is found by interpolating *back* 0^{d}.230 from that given on p. 332; and 2^{s}.5122, the change of right ascension in 1^{m}, by interpolating 7^{m} *forward* of that given on p. 64 for

April 17, 10^h. The time of semidiameter passing the meridian is interpolated *back* $0^d.459$ from that given on p. 332, and is added to the right ascension of the centre, since the bright limb is II., or the following one.

The Greenwich mean time computed from the right ascension of the moon's centre agrees with that stated above.

Moon Culminating Stars, pages 335–338.—The *mean* places, with their annual variations, of 174 stars near the moon's path are given for the beginning of the fictitious year (1873, Jan. 0^d—.438). The names of 35 of them, whose *apparent* places are given in the Ephemeris of the *Fixed Stars*, are printed in SMALL CAPITALS.

The *apparent* places of the others may be obtained by the quantities and formulæ on pages 251–260. To illustrate the use of these, suppose the apparent place of No. 133, λ Sagittarii, one of the four stars proper to be observed with the moon on the 17th April, be required at its transit of that date at Calcutta.

The Washington mean time of the transit at Calcutta is April 16, $23^h.2$, or $11^h.2 = 0^d.47$ after midnight of April 16. The quantities from page 251, or page 255, are to be taken out for this time.

1st *Method*.

(Star Tables)	$\log a$	0.569	$\log b$	7.445 n	$\log c$	7.812	$\log d$	8.867 n
(p. 251)	$\log \mathcal{A}$	7.419 n	$\log B$	0.744 n	$\log C$	1.220 n	$\log D$	0.978 n
(Star Tables)	$\log a'$	0.245	$\log b'$	9.998	$\log c'$	8.568 n	$\log d'$	8.577 n
	$\log \mathcal{A}a$	7.988 n	$\log Bb$	8.189	$\log Cc$	9.032 n	$\log Dd$	9.845
	$\log \mathcal{A}a'$	7.664 n	$\log Bb'$	0.742 n	$\log Cc'$	9.788	$\log Dd'$	9.555

(p. 336)	$a =$	$18^h\ 20^m\ 8^s.00$		$\delta =$	$-25°\ 29'\ 23''.4$
	$\mathcal{A}a =$	$-$ 0.010		$\mathcal{A}a' =$	-0.01
	$Bb =$	$+$ 0.015		$Bb' =$	-5.52
	$Cc =$	$-$ 0.108		$Cc' =$	$+0.61$
	$Dd =$	$+$ 0.700		$Dd' =$	$+0.36$
	$E =$	$-$ 0.003	$\mu' = -0''.23$	$\tau\mu' =$	-0.07
$\mu = +0^s.001$	$\tau\mu =$	0.000			
Apparent Place,	$a' =$	18 20 8.59		$\delta' =$	-25 29 28.0

2d *Method*.

(p. 336)	$a = 18^h\ 20^m.1$		$\delta = -25°\ 29'.4$
(p. 255)	$G = 17\ 57.6$		$G + a = 12^h\ 17^m.7 = 184°\ 25'$
"	$H = 16\ \ 0.8$		$H + a = 10\ 20.9 = 155\ 13$

$\log \frac{1}{15}$	8.8239	$\log \frac{1}{15}$	8.8239	$a =$	$18^h\ 20^m\ 8^s.00$
$\log g$	0.7444	$\log h$	1.2818	$f =$	$-$ 0.011
l. sin $(G + a)$	8.8874 n	l. sin $(H + a)$	9.6223	$(g) =$	$+$ 0.014
l. tan δ	9.6783 n	l. sec δ	0.0445	$(h) =$	$+$ 0.592
$\log (g)$	8.1340	$\log (h)$	9.7725	$\tau\mu =$	0.000
Apparent Right Ascension				$a' =$	18 20 8.59
$\log g$	0.7444	$\log h$	1.2818		
l. cos $(G + a)$	9.9987 n	l. cos $(H + a)$	9.9580 n	$\delta =$	$-25°\ 29'\ 23''.4$
$\log (g')$	0.7431 n	l. sin δ	9.6338 n	$(g') =$	$-$ 5.53
$\log i$	$\overline{0.8574}$ n	$\log (h')$	0.8736	$(h') =$	$+$ 7.47
l. cos δ	9.9555			$(i) =$	$-$ 6.50
$\log (i)$	0.8129 n			$\tau\mu' =$	$-$ 0.07
Apparent Declination				$\delta' =$	-25 29 28.0

The MOON's *Semidiameter* and *Equatorial Horizontal Parallax* for each mean noon and midnight are on pages 339–342.* In the moon's Ephemeris, as in that of the sun, the hourly motions belong to the instants for which they are given. The hourly change of semidiameter is equal to .2723 times that of the horizontal parallax.

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*For eclipses and occultations, BURCKHARDT's value of the semidiameter, which is $2''.5$ less, is preferred.

The times of the *Moon's Phases*, *Apogee*, *Perigee*, and *greatest Libration*, are given on page 343; and the position of the *Moon's Equator* and the *Moon's mean longitude* on page 344; and a Table for computing the *Libration* of the Moon on page 345.

The *Ephemerides of the seven principal Planets* (pages 346–387) are given both for *mean noon* and the time of *transit*. The *hourly differences* are also given for the same instants. Third differences were used in their computation.

The *Horizontal Parallaxes*, *Vertical Semidiameters and Sidereal Times of the Semidiameters passing the Meridian* are on pages 388 and 389.

The *Sun's Coördinates* (pages 390–401) are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator at the beginning of the year (Jan. $0^{\mathrm{d}}.0$). In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:). The latitude is referred to the ecliptic of the date. The reduction to the mean ecliptic of Jan. 0. is $+0''.488\,\tau\sin(\odot+187^\circ)$, in which τ is the time from Jan. 0, in parts of a year.

The *Heliocentric Coördinates* of the Planets (pages 402–409) are referred to the mean equinox and ecliptic of the mean noon of the 2405,000th day of the Julian Period, or 1872, July 25.

The columns $-\frac{k^2}{r^3}x$, &c., contain the quantities $-1600\,m\frac{k^2}{r^3}x$, $-1600\,m\frac{k^2}{r^3}y$, $-1600\,m\frac{k^2}{r^3}z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Page 409 contains the *Inclinations and Longitudes of the Ascending Nodes* at the same epoch, and the *Masses* of the several Planets with their logarithms. The changes of the Inclinations and Nodes in 100 days include the motions of the ecliptic and equinox.

The Heliocentric Coördinates and Masses of the Planets are given for the computation of perturbations.

Eclipses.—Pages 410–416 contain the elements necessary for computation and the principal phases of each eclipse of the SUN and MOON. The semidiameters of the moon are $2''.5$, and those of the sun $2''.2$, less than those in the Ephemeris.

The charts of the *Solar Eclipses* show the part of the world in which each is visible. The dotted curves pass through places, where the eclipse begins, or ends, at an exact hour of Washington mean time, and aid in finding an approximate time of the beginning, or end, at any place. The limits and central line will give some idea of the magnitude of the eclipse. The longitudes are reckoned west from Washington.

The Tables of *Data of the Solar Eclipses* contain certain quantities* derived from the elements and independent of the place of observation. They are given for successive times at the Washington meridian; and if their values for the *Penumbra* be taken out for a time T_0, assumed near that of the beginning, or end, of the eclipse at any place, the prediction for that place may be computed quite accurately by the following formulæ:

Let φ = the latitude of the place, + when north,
λ = its longitude from Washington, + when west,
(*Bessel.*) $\log e = 8.912205$, $\log(1-e^2) = 9.9970916$, $\sin\chi = e\sin\varphi$,
$h = \sec\chi\cos\varphi$, $k = (1-e^2)\sec\chi\sin\varphi$,
$a = A - h\sin(\mu-\lambda)$,
$b = B - Ek + Gh\cos(\mu-\lambda)$,
$c = -C + Fk - Hh\cos(\mu-\lambda)$,
$m = \sqrt{bc}$ (usually with same sign as a).

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* **The formulæ are given in CHAUVENET'S *Spherical and Practical Astronomy*, Vol. I, page 513. The changes of *A*, *B*, and *C* for *one minute*, or *one second*, are expressed in units of the sixth decimal place.**

If $m=a$, the time T_0 is correctly chosen. If m differ from a, a correction t of the assumed time may be obtained in seconds by the formulæ,

$$\log \mu' = 1.86167, \qquad a' = A' - \mu' h \cos(\mu - \lambda),$$

$$\tan \tfrac{1}{2} Q = \frac{c}{m} = \frac{m}{b} \qquad b' = B' - \mu' G h \sin(\mu - \lambda),$$

$$t = \frac{1000000\,(m-a)}{a' + b' \cot Q}$$

and a new approximation to the actual Washington time will be

$$T_0' = T_0 + t,$$

with which the computation may be revised.

Thus successive approximations are made until for the last assumed time T_0, $m=a$ very closely, and t is quite small. The local mean time of the phenomenon will be, using the last values of T_0 and t,

$$T_0 + t - \lambda.$$

Q must be taken of the same sign with a, and is a sufficiently near approximation to the angular distance of the point of contact reckoned from the *north* point of the sun's limb, + towards the *east*.

For a total or annular eclipse, the prediction of the interior contacts may be made in the same way, using the *Data* for the *Shadow;* except that Q will have a sign opposite that of a in a total eclipse.

To find V, the angular distance of the point of contact from the *Vertex* of the sun's limb, + towards the *left*, we have the formulæ

$$p \sin P = \sin \varphi \qquad c \sin C = \cos P \tan(\mu - \lambda)$$

$$p \cos P = \cos \varphi \cos(\mu - \lambda) \qquad c \cos C = \sin(P - \delta')$$

$$V = Q - C,$$

in which δ' is the sun's declination.

If the values of Q at the beginning and at the end of the eclipse be found, and their difference (with regard to signs) be denoted by $2\,\theta$, the number of digits eclipsed is

$$12\,(1+n) \sin^2 \tfrac{1}{2}\theta, \qquad \text{or } 12\,(1+n) \cos^2 \tfrac{1}{2}\theta,$$

according as θ is acute or obtuse: n being the quotient of the semidiameter of the moon divided by that of the sun.

θ may also be found from the formulæ:

$$\tan R = \frac{b'}{a'} \qquad \theta = Q + R$$

(in which R has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \cdot \frac{m-a}{a'} \cdot \frac{\sin Q \cos R}{\sin \theta}.$$

The following is an example of the computation of the end of the Eclipse of May 25, 1873, for the Observatory at Greenwich, for which

$\varphi = +51^\circ\ 28'\ 38''.2$ $\qquad\lambda = 282^\circ\ 56'\ 54''.2$

(1)	$\log e = 8.912205$		
(2)	$\text{l.} \sin \varphi = 9.8934073$	(1) + (2)	$\text{l.} \sin \chi = 8.805612$
(3)	$\log(1 - e^2) = 9.9970916$		
(4)	$\text{l.} \sec \chi = 0.0008889$	(2) + (3) + (4)	$\log k = 9.8913878$
(5)	$\text{l.} \cos \varphi = 9.7943660$	(4) + (5)	$\log h = 9.7952549$

By the chart, the Washington mean time of the end of the eclipse at Greenwich is $16^\text{h}\ 15^\text{m}$.

A nearer approximation is $16^\text{h}\ 15^\text{m}.4$ for which we take from the table for *Penumbra*, on page 412, the values of A, B, C, &c.

Computation of t, the correction of T_0.

$\mu = 244^\circ\ 39'\ 43''.6$

$\mu - \lambda = 321\ 42\ 49.4$

(1)	l. $\sin(\mu-\lambda)$	$= 9.7921051n$
(2)	$\log h$	$= 9.7952549$
(3)	l. $\cos(\mu-\lambda)$	$= 9.8948280$
(4) = (1) + (2)	$\log h \sin(\mu-\lambda)$	$= 9.587360n$
(5)	$\log \mu'$	$= 1.86167$
(6)	$\log G$	$= 9.552459$
(7) = (2) + (3)	$\log h \cos(\mu-\lambda)$	$= 9.690083$
(8)	$\log H$	$= 9.562831$
(6) + (7)	$\log G h \cos(\mu-\lambda)$	$= 9.242542$
(7) + (8)	$\log H h \cos(\mu-\lambda)$	$= 9.252914$
(5) + (7)	$\log \mu' h \cos(\mu-\lambda)$	$= 1.55175$
(4) + (5) + (6)	$\log \mu' G h \sin(\mu-\lambda)$	$= 1.00149n$
(20)	$\log b$	$= 0.018447$
(21)	$\log c$	$= 8.686636$
(22) = $\frac{1}{2}$[(20) + (21)]	$\log m$	$= 9.352541$
(22) − (20) = (21) − (22)	l. $\tan \frac{1}{2} Q$	$= 9.334095$
Angle from N. point,	Q	$= +24^\circ\ 21'.5$
(29)	l. cot. Q	$= 0.34415$
(30)	$\log b'$	$= 1.71164$
(29) + (30)	log. $b' \cot Q$	$= 2.05579$
(31)	$\log(m-a)+6$	$= 2.9031$
(32)	$\log(a' + b' \cot Q)$	$= 2.3483$
(31) − (32)	$\log t$	$= 0.5548$

(9)	$\log E$	$= 9.970431$
(10)	$\log k$	$= 9.891388$
(11)	$\log F$	$= 9.968875$
(9) + (10)	$\log E k$	$= 9.861819$
(10) + (11)	$\log F k$	$= 9.860263$
(12)	A	$= -0.16230$
(13)	$-h \sin(\mu-\lambda)$	$= +0.38669$
(14)	B	$= +1.59607$
(15)	$-E k$	$= -0.72748$
(16)	$G h \cos(\mu-\lambda)$	$= +0.17480$
(17)	$-C$	$= -0.49724$
(18)	$F k$	$= +0.72487$
(19)	$-H h \cos(\mu-\lambda)$	$= -0.17903$
(12) + (13)	a	$= +0.22439$
(14) + (15) + (16)	b	$= +1.04339$
(17) + (18) + (19)	c	$= +0.04860$
	m	$= +0.22519$
	$m - a$	$= +0.00080$
(23)	A'	$= +\ 144.92$
(24)	$-\mu\ h \cos(\mu-\lambda)$	$= -\ 35.62$
(25)	B	$= +\ 41.45$
(26)	$-\mu' G h \sin(\mu-\lambda)$	$= +\ 10.03$
(25) + (26)	b'	$= +\ 51.48$
(27) = (23) + (24)	a'	$= +\ 109.30$
(28)	$b' \cot Q$	$= +\ 113.71$
(27) + (28)	$a' + b' \cot Q$	$= +\ 223.01$

		h	m	s
Assumed time, ...	$T_0 =$	16	15	24.00
Correction of the assumed time, ...	$t =$		+	3.59
Washington time of the end, ...	May 25,	16	15	27.59
Greenwich time of the end	May 25,	21	23	39.59

We have also $C = -34^\circ\ 55'$; the angle from the *Vertex*, $V = +59^\circ\ 16'$; $\delta = +49^\circ\ 35'$, and the magnitude of the eclipse 4.2 digits, or 0.35 of the sun's disc, on the north limb.

Occultations.—Pages 416–418 contain a list of such occultations and near approaches as will be visible at Washington during the year 1873. For the latter, the time of nearest approach, the nearest point of the moon's limb, and the distance of the star from the moon's limb, are stated.

Pages 419–451 contain *Elements for facilitating the Prediction of Occultations of Planets and Stars by the Moon.* The list includes all stars to the 6½ magnitude in the *Catalogue of the British Association*, and a few others of less magnitude, contained in the *Almanac Catalogue of Zodiacal Stars* and chiefly belonging to clusters, which can be occulted during the year 1873.

The elements comprise the *Date*, *the Name*, *Magnitude and Declination of the Star*. the *Limiting Latitudes* within which the occultation may be visible; and, at the time of geocentric conjunction of the moon and star in right ascension, the following quantities;

$\mathcal{T}$ = Washington mean time,

H = Hour angle of the star at Washington, + when west;

$$X = \frac{15\,(a - a')}{\pi} \cos \delta = 0, \qquad Y = \frac{\delta - \delta'}{\pi},$$

$$x' = \frac{15\,\Delta a}{\pi} \cos \delta, \quad y' = \frac{\Delta \delta}{\pi},$$ the hourly changes of x and y;

in which a and δ are the true right ascension and declination of the moon,

$\Delta\, a$ and $\Delta\, \delta$, their motions in one hour of mean time,

π, the moon's equatorial horizontal parallax,

a' and δ', the apparent right ascension and declination of the star.

The reductions of the mean place of the star at the beginning of the year to its apparent place at the date, are also given to facilitate the reduction of observed occultations.

For any other Washington mean time $T = ☌ + t$, we have (μ being the sidereal equivalent of t, and t as a coefficient being expressed in hours)

$h = H + \mu$, the star's hour angle at Washington,

$$x = t\, x', \qquad y = Y + t\, y'.$$

As the moon's motion is here regarded as uniform, the expressions for x and y are more nearly correct the smaller the interval t. The exact values, to be employed in the reduction of an observed occultation, are

$$x = \frac{\sin\,(a - a')\cos\delta}{\sin\pi}$$

$$y = \frac{\sin\,(\delta - \delta')\cos^2\tfrac{1}{2}\,(a - a') + \sin\,(\delta + \delta')\sin^2\tfrac{1}{2}\,(a - a')}{\sin\pi}$$

in which a, δ and π are to be taken from the Ephemeris for the time T. But for predicting the times of *immersion* and *emersion*, and the points on the moon's limb where these appearances take place, the preceding expressions suffice to enable the observer to determine when and where to watch for these phenomena.

For the place of observation, let

φ = its latitude, + when north;

λ = its longitude from Washington, + when west;

(*Bessel.*) $\log e = 8.9122\ 05$, $\quad \log\,(1 - e^2) = 9.9970\ 916$,

$\sin\chi = e\sin\varphi$, $\quad E = (1 - e^2)\sec\chi$, $\quad F = \sec\chi$.

$\mu' = 54147.8 \sin 1''$, $\quad \log\mu' = 9.41916$.

The constants for the place, required both in the prediction of occultations and the reduction of those observed, are φ, λ, and $E\sin\varphi$, $F\cos\varphi$, $\mu' F\cos\varphi$, or their logarithms.

The values of E and F and their logarithms are given for different latitudes in the following table:

φ	*E.*	*F.*	Log *E.*	Log *F.*
0°	1—.0067	1.0000	9.9971	0.0000
±10	1—.0066	1.0000	9.9971	0.0000
20	1—.0063	1.0001	9.9973	0.0002
30	1—.0059	1.0008	9.9975	0.0004
40	1—.0053	1.0014	9.9977	0.0006
50	1—.0047	1.0020	9.9979	0.0009
60	1—.0042	1.0025	9.9982	0.0011
70	1—.0037	1.0030	9.9984	0.0013
80	1—.0034	1.0033	9.9985	0.0014
90	1—.0033	1.0034	9.9985	0.0014

An occultation will not be visible unless,

1. The latitude of the place is included within the limiting parallels;
2. At the time of occultation, or the local mean time ($T - \lambda$), the sun is sufficiently below the horizon;

3. At that time the star is above the horizon, or its local hour angle $(h-\lambda)$ is numerically less than τ found by the formula

$$\cos\tau = -\tan\varphi\tan\delta'.$$

A table of τ, or the hour angle of a body in the horizon, computed for the latitude of the place and different declinations, will be useful for such comparisons.

These conditions can generally be determined in advance, as in latitudes less than 60° $(☌-\lambda)$ may be used instead of $(T-\lambda)$ except within two hours of sunrise or sunset; and $(H-\lambda)$ instead of $(h-\lambda)$ except within half an hour of the star's rising or setting. For these exceptional cases, which, however, are not favorable for observation, the time of *apparent* conjunction in right ascension, or some nearer approximation to the time of occultation, can be subsequently employed.

Having ascertained that an occultation will be visible, we may proceed to compute the times of immersion and emersion by the following formulæ:

1. To find approximately the time[*] of *apparent* conjunction in right ascension, as affected by parallax;

$$u = F\cos\varphi\sin(H-\lambda)$$
$$u' = \mu' F\cos\varphi\cos(H-\lambda)$$

In *hours*, $\qquad (t) = \dfrac{u}{x'-u'}$

Washington time of *apparent* conjunction, $(T) = ☌ + (t)$
Local " " " $(T)-\lambda$

The value of (T) to the nearest tenth of an hour is sufficiently accurate. If a closer approximation is desired, the computation may be repeated, using $h=H+(\mu)$ instead of H, (μ) being the sidereal equivalent of (t),

$$x=(t)\,x' \qquad (t') = -\frac{x-u}{x'-u'}$$
$$(T')=(T)+(t').$$

2. To find a nearer approach to the time of either phase, let us assume the Washington mean time T, which for the first computation may be the computed time of *apparent* conjunction, or some conjectural time near it. For this time find

$$t=T-☌ \qquad h=H+\mu,\text{ or } h-\lambda=H-\lambda+\mu$$
$$x=t\,x' \qquad y=Y+t\,y',$$

and then T_1 and T_2, the approximate Washington mean times of immersion and emersion, by the following formulæ. The local mean times will be found by subtracting from T_1 and T_2 the longitude of the place.

$$A\sin B=E\sin\varphi \qquad u=F\cos\varphi\sin(h-\lambda)$$
$$A\cos B=F\cos\varphi\cos(h-\lambda)\text{[†]} \qquad v=A\sin(B-\delta')$$
$$u'=\mu' A\cos B$$
$$v'=\mu' u\sin\delta'$$

[or, with other auxiliaries than A and B,

$$b=F\cos\varphi\cos(h-\lambda) \qquad u'=b\,\mu' \qquad v=E\sin\varphi\cos\delta'-b\sin\delta']$$

$$m\sin M=x-u \qquad n\sin N=x'-u'$$
$$m\cos M=y-v \qquad n\cos N=y'-v'$$

(*Burckhardt.*) $\quad k=.27227 \qquad \log k=9.43500$

$$\cos\psi=\frac{m\sin(M-N)}{k} \qquad \psi<180°$$

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[*] It is convenient, but not necessary, to have this time.

[†] If $(h-\lambda)$ be restricted to values numerically less than 12^h, or 180°, B may be taken in the same quadrant with $(h-\lambda)$, and have the same sign as the latitude. For a place where many occultations are observed, tables of A, B, u and u' for different values of $(h-\lambda)$, or of $E\sin\phi\cos\delta'$ for different declinations, would be convenient.

	For *Immersion.*	For *Emersion.*
In hours,	$t_1 = -\frac{m \cos (M-N)}{n} - \frac{k \sin \psi}{n}$	$t_2 = -\frac{m \cos (M-N)}{n} + \frac{k \sin \psi}{n}$
Washington mean time,	$T_1 = T + t_1$	$T_2 = T + t_2$
Local " "	$T_1 - \lambda$	$T_2 - \lambda$

3. Assuming now $T_1 = \delta + t + t_1$ for the Immersion, or $T_2 = \delta + t + t_2$ for the Emersion, as the Washington time instead of T, and recomputing, we can obtain nearer approximations to the times of these phenomena. But the first operation will give the times usually within one or two minutes, which is sufficiently accurate for watching for an immersion. For an emersion a more accurate knowledge is desirable. But for this purpose it will often be sufficient to substitute $(h_2 - \lambda) = (h - \lambda + \frac{1}{2}\,\mu_2)$ for $(h - \lambda)$ in the computation of u' and v', and, using the same m and M as before, recompute n, N, ψ and t_2, a new correction to be added to T.

If log. $m \sin (M-N) = 9.4350$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\cos \psi < 1$, or $\cos \psi > 1$. In the latter case the impossible value of $\cos \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the Ephemeris of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 0°$, or $180°$, according as $m \sin (M-N)$ is $+$ or $-$; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M-N)}{n}$$

The distance from the moon's limb is then

$$\pi\, [m \sin (M-N) - k],$$

disregarding the sign of $m \sin (M-N)$; or, allowing for the augmentation of the semidiameter,

$$\pi\, [m \sin (M-N) - k]\, [1 + z \sin \pi],$$

where
$$z = A \cos (B - \delta').$$

4. Having found satisfactorily the times of immersion and emersion, and therefore N and ψ in each case, we have as the angle from the *North point* of the moon's limb and reckoned towards the *West*,

$$Q = 90° - N - \psi \qquad \text{for an } \textit{Immersion},$$
$$Q = 90° - N + \psi \qquad \text{for an } \textit{Emersion};$$

and, taking

$$c \sin C = u + t\, u'$$
$$c \cos C = v + t\, v',$$

in which the last value of t for the particular phase is properly used, we have as the angle from the *Vertex* of the moon's limb, or that point which is nearest the zenith,

$$V = Q + C$$

also reckoned in the same direction as Q.

For the image as seen through an inverting telescope, these angles should be increased by 180°.

5. As a check on the accuracy of the work, we have, using the last computed values of the several quantities,

$$[(x-u) + t\,(x'-u')]^2 + [(y-v) + t\,(y'-v')]^2 = k^2 = 0.07413\,;$$

Or, we may recompute with the last determined time of immersion, or of emersion u, v, x, and y, and we should have for either, as the condition of the phenomenon,

$$(x-u)^2 + (y-v)^2 = k^2 = 0.07413$$

or,
$$\log m = \log k = 9.4350$$

Greater values than these indicate that the computed time of immersion is too early, and of emersion too late, by a quantity nearly proportional to the difference.

As an example, suppose it is required to find the times of immersion and emersion of 40 Geminorum, March 7, 1873, at Sitka, Alaska Territory, for which

$$\varphi = +57^\circ\ 2'.9 \qquad \lambda = +3^h\ 53^m.0.$$

The data for the computation are given on page 424. We see in advance that ϕ is between the limiting latitudes; that $(☌ - \lambda)$ is more than 7^h, or more than one hour after sunset; and that $(H - \lambda)$ is less than half an hour from the meridian.

The constants of the place are:

	$\text{l. sin } \phi = 9.9238$		$\text{l. cos } \phi = 9.7355$		$\log F \cos \phi = 9.7365$
	$\log E = 9.9981$		$\log F = 0.0010$		$\log \mu' = 9.4192$
(1)	$\log E \sin \phi = 9.9219$	(2)	$\log F \cos \phi = 9.7365$	(3)	$\log \mu' F \cos \phi = 9.1557$

From page 424, we find, for the time of *geocentric* conjunction:

		h m		
Washington time,	☌ $=$	11 12.3	$Y = +.4386$	$\delta' = +26^\circ\ 5'.2$
	$H = +$	3 24.5	$x' = .5500$	$\text{l.sin } \delta' = 9.6432$
Sitka time,	☌ $- \lambda =$	7 19.3	$y' = -.0145$	
	$H - \lambda = -$	0 28.5 $= -7^\circ\ 7'.5$		

1. For an approximation to the time of *apparent* conjunction, we have:

(2)	$\log F \cos \phi = 9.736$	(3)	$\log \mu' F \cos \phi = 9.156$	$x' = +.550$
(4)	$\text{l.sin } (H - \lambda) = 9.093n$	(5)	$\text{l.cos } (H - \lambda) = 9.997$	$u' = +.142$
(6) = (2) + (4)	$\log u = 8.829n$	(7) = (3) + (5)	$\log u' = 9.153$	$x' - u' = +.408$
(8)	$\log (x' - u') = 9.611$			

		☌ $=$	11 12.3
(6) - (8)	$\log (t) = 9.218n$	$= -.165 = -$	9.9
Washington mean time,		$(T) =$ ☌ $+ (t) =$	11 2.4

2. Assuming this time, we proceed as follows to find the times of immersion and emersion:

(9) Sid. eq. of t.	$\mu = -0^h\ 9^m.9$		(25)	$X = .0$
(10)	$H - \lambda = -0\ 28.5$		(26)	$t x' = -.165 \times .5500 = -.0908$
(11)=(9)+(10)	$h - \lambda = -0\ 38.4 = -9^\circ\ 36'.0$		(27)	$Y = +.4386$
			(28)	$t y' = -.165 \times -.0145 = +.0024$
(12)	$\text{l. sin } (h - \lambda) = 9.2221n$			
(13)=(2)	$\log F \cos \phi = 9.7365$		(29) = (25) + (26)	$x = -.0908$
(14)	$\text{l. cos } (h - \lambda) = 9.9939$		(30)	$u = -.0909$
			(31) = (27) + (28)	$y = +.4410$
(15)	$\text{l. sin } \delta' = 9.6432$		(32)	$v = +.5139$
(16)=(12)+(13)	$\log u = 8.9586n$	$\text{l. } v' = 8.0210n$	(33) = (29) - (30)	$x - u = m \sin M = +.0001$
(17) *Constant,*	$\log \mu' = 9.4192$		(34) = (31) - (32)	$y - v = m \cos M = -.0729$
(18)=(13)+(14)	$\log A \cos B = 9.7304$	$\text{l. } u' = 9.1496$		
(19)=(1)	$\log A \sin B = 9.9219$	° ′	(35)	$x' = +.5500$
(20)=(19)-(18)	$\text{l. tan } B = 0.1915$	$B = +57\ \ 14$	(36)	$u' = +.1411$
(21)	$\text{l. sin } B = 9.9247$	$\delta' = +26\ \ 5$	(37)	$y' = -.0145$
(22)=(19)-(21)	$\log A = 9.9972$	$B - \delta' = +31\ \ 9$	(38)	$v' = -.0105$
(23)	$\text{l. sin } (B - \delta') = 9.7137$		(39) = (35) - (36)	$x' - u' = n \sin N = +.4089$
(24)=(22)+(23)	$\log v = 9.7109$		(40) = (37) - (38)	$y' - v' = n \cos N = -.0040$

(41)	$\log m \sin M = 6.0000$		(45)	$\log n \sin N = 9.6116$
(42)	$\log m \cos M = 8.8627n$	° ′	(46)	$\log n \cos N = 7.6021n$
(43)=(41)-(42)	$\text{l. tan } M = 7.1373n$	$M = +179\ \ 55$	(47) = (45)-(46)	$\text{l. tan } N = 2.0095n$
(44)	$\text{l. cos } M = 0.0000n$	$N = +\ 90\ \ 34$	(48)	$\text{l. sin } N = 0.0000$
		$M - N = +\ 89\ \ 21$		
(49)=(41)-(44)	$\log m = 8.8627$		(49)	$\log m = 8.8627$
(50)	$\text{l. sin } (M - N) = 0.0000$	° ′	(53)	$\text{l. cos } (M - N) = 8.0548$
(51)	$\log \frac{1}{k} = 0.5650$	$90^\circ - N = -\ 0\ \ 34$	(54) = (48)-(45)	$\log \frac{1}{n} = 0.3884$
(52)=(49)+(50)+(51)	$\text{l. cos } \psi = 9.4277$	$\psi = +74\ \ 28$	(55)=(49)+(53)+(54)	$\log \frac{m}{n} \cos (M - N) = 7.3059$

(51) — (52) *Angle from N. point* at Im. $Q_1 = -75^\circ$ (56) *Constant,* $\log k = 9.4350$

(52) + (52) " " " at Em. $Q_2 = +74$ (57) $\text{l. sin}\,\psi = 9.9838$

(58)=(54)+(56)+(57) $\text{l.}\,\frac{k}{n}\sin\psi = 9.8072$

(59) $-\frac{m}{n}\cos(M - N) = -.0020$

(60) $\frac{k}{n}\sin\psi = +.6415$

(59) — (60)	$t_1 = -.6435 = -0^{h}\ 38^{m}.6$	$t_1 = +.6395 = +0^{h}\ 38^{m}.4$
	$T = 11\ 2.4$	$T = 11\ 2.4$
Washington mean time,	$T_1 = T + t_1 = 10\ 23.8$	$T_2 = T + t_2 = 11\ 40.8$
	$\lambda = 3\ 53.0$	$\lambda = 3\ 53.0$
Sitka mean time,	$T_1 - \lambda = 6\ 30.8$	$T_2 - \lambda = 7\ 47.8$

3. Assuming these times and revising the computation, we obtain as a nearer approximation:

	$t_1 = +0^{h}\ 0^{m}.4$	$t_2 = 0^{h}\ 0^{m}.0$
Sitka mean time,	$T_1 - \lambda = 6\ 31.2$	$T_2 - \lambda = 7\ 47.8$
	$Q_1 = -\ 74^\circ.3$	$Q_2 = +\ 73^\circ.2$
	$c\sin C_1 = u + t'_1 u' = -\ .1799$	$c\sin C_2 = u + t'_2 u' = +\ .0002$
	$c\cos C_2 = v + t'_1 v' = +\ .5240$	$c\cos C_2 = v + t'_2 v' = +\ .5106$
and, by the Traverse Table,*	$C_1 = -\ 18^\circ.9$	$C_2 = 0^\circ.0$
Angle from Vertex,	$Q_1 + C_1 = -\ 93^\circ.2$	$Q_2 + C_2 = +\ 73.^\circ 2$

We shall also find for $[(x - u) + t'(x' - u')]^2 + [(y - v) + t'(y' - v')]^2$

At *Im.* 0.07404 At *Em.* 0.07414

which differ very little from 0.07413, the value of k^2.

Instead, however, of an entire recomputation, a partial revision may be made, like the following, for correcting the computed time of emersion:

(9) $\frac{1}{2}\mu' = +0^{h}\ 19^{m}.2$ (35) $x' = +.5500$

(10) $h - \lambda = -0\ 38.4$ (36) $u' = +.1427$

(11)=(9)+(10) $h_2 - \lambda = -0\ 19.2 = -\ 4^\circ\ 48'.0$ (37) $y' = -.0145$

(38) $v' = -.0053$

(12) $\text{l. sin}\,(h_2 - \lambda) = 8.9226n$ (39)=(35)-(36) $x' - u' = n\sin N = +.4073$

(13)=(2) $\log F\cos\phi = 9.7365$ (40)=(37)-(38) $y' - v' = n\cos N = -.0092$

(14) $\text{l. cos}\,(h_2 - \lambda) = 9.9985$

(45) $\log n\sin N = 9.6099$

(15) $\text{l. sin}\,\delta' = 9.6432$ (46) $\log n\cos N = 7.9638n$

(16)=(12)+(13) $\log u = 8.6591n$ $\text{l.}\,v' = 7.7215n$ (47)=(45)+(46) $\text{l. tan}\,N = 1.6461n$

(17) $\log\mu' = 9.4192$ (48) $\text{l. sin}\,N = 9.9999$

(18)=(13)+(14) $\log A\cos B = 9.7351$ $\text{l.}\,u'\ 9.1543$

(49) $\log m = 8.8627$

(49) $\log m = 8.8627$ $M = +179^\circ\ 55'$ (53) $\text{l. cos}\,(M - N) = 8.3828$

(50) $\text{l. sin}\,(M - N) = 9.9999$ $N = +\ 91\ 18$ (54)=(48)-(45) $\log\frac{1}{n} = 0.3900$

(51) $\log\frac{1}{k} = 0.5650$ $M - N = +\ 88\ 37$ (55)=(49)+(53)+(54) $\log\frac{m}{n}\cos(M - N) = 7.6355$

(52)=(49)+(50)+(51) $\text{l. cos}\,\psi = 9.4276$ (56) $\log k = 9.4350$

(57) $\text{l. sin}\,\psi = 9.9839$

(58)=(54)+(56)+(57) $\log\frac{k}{n}\sin\psi = 9.8089$

(59) $-\frac{m}{n}\cos(M - N) = -0^{h}.0043$

(60) $\frac{k}{n}\sin\psi = +0.6441$

(59)+(60)	$t'_2 = +0.6398$	$= +0^{h}\ 38^{m}.4$
	(T)	$= 11\ 2.4$
Washington mean time,	$T_2 = T + t_2$	$= 11\ 40.8$
Sitka mean time,	$T - \lambda$	$= 7\ 47.8$

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* A large portion of this computation may be made by the Traverse Table instead of Logarithms.

Jupiter's Satellites, pages 452–483.—These pages contain for the several Satellites—

1. The Washington mean times of the occultations, eclipses, transits and transits of shadows, arranged in the order of time. W, after a phase, indicates such as are visible at Washington, or which occur when the sun is more than 8° below and Jupiter more than 8° above the horizon of that place.

2. A diagram for each month constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipse for an inverting telescope. The stars indicate the points of disappearance and reappearance, distinguished by *d* and *r*. The space between them shows the position of the shadow of the planet.

3. Washington mean time of geocentric superior conjunction, arranged for each planet separately.

4. The rectangular coördinates x' and y' for successive times reckoned from the next preceding superior conjunction, computed for a constant major axis and maximum minor axis of the apparent ellipse described by the satellite as seen from the sun at its mean distance from the planet.

5. The *factors* by which x' and y' are to be multiplied to obtain the actual coördinates x and y for the apparent ellipse, as seen from the earth at any date; the inclination p of the minor axis to the circle of declination, reckoned from the *north*, positive towards the *east;* and the actual coördinates x and y at the times of eclipse of each satellite.

The coördinates are referred to the centre of the primary and to the major and minor axes of the ellipse described by the satellite, and are expressed in seconds of arc. x is positive when on the *east* side of the planet; y is positive when *north*. By means of them the configurations of the satellite can be found at any time.

The *Elements of Saturn's Ring*, page 484, give the *apparent* magnitude and position of its several components for each 20 days. The *apparent Discs of* Venus and Mars are given on the same page for each 30 days.

The *Phenomena*, pages 485, 486, include the times of conjunction, opposition and quadrature, perihelion and aphelion, stationary points, and conjunction, with the moon in right ascension, of the principal planets.

The *Positions of the Principal Observatories* are given on pages 487, 488. The authorities for these positions, and the longitudes with reference to the meridians upon which they actually depend, will be found in the American Ephemeris for 1870, 1871, and 1872.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1873.

THE Precession of the Equinoxes, the Mean Obliquity of the Ecliptic, and the Constant of Aberration (p. 250) are taken from STRUVE and PETERS. They are:

$$\text{Precession}^* = 50''.2411 + 0''.0002268\,t,$$
$$\text{Obliquity}^\dagger = 23^\circ\ 27'\ 54''.22 - 0''.4645\,t - 0''.0000014\,t^2,$$
$$\text{Aberration}^\ddagger = 20''.4451 \pm 0''.0111,$$

in which t is the number of years after 1800.

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulæ given in his *Numerus Constans Nutationis*, pp. 46–48, and reprinted in the volume of this Ephemeris for 1855. These quantities have been used in all computations relating to the Fixed Stars.

In the Ephemerides of the Sun, Moon, and Planets, the Obliquity of the Ecliptic and the Nutation of HANSEN and OLUFSEN'S *Tables du Soleil* have been used. The Aberration in these tables, 20''.255, has been used in the Ephemeris of the Sun. The Mean Obliquity exceeds that of PETERS by 0''.37.

The General Constants for Star Reduction are adapted to the formulæ given on page 260. They are computed from the *Tables to facilitate the Reduction of Places of the Fixed Stars, prepared for the use of the American Ephemeris and Nautical Almanac*, Washington, 1869, which have been used in manuscript in the preparation of previous volumes of this work subsequent to that of 1861.

The Mean Places of the 198 Standard Stars have also been taken from the same tables. Dr. GOULD'S *Standard Places of Fundamental Stars, U. S. Coast Survey*, Washington, 1866, is the authority given for 48 Northern Circumpolar Stars and 128 Time Stars; the *British Nautical Almanac* for 1848 for 13 Stars south of —40° declination; and WOLFER'S *Tabulæ Reductionum Observationum Astronomicarum*, Berlin, 1858, for Sirius, Castor, (the mean of the components,) Procyon, γ Draconis, and α Cephei. The magnitudes, except of the 13 Southern Stars, are ARGELANDER'S.

The reductions from the mean to the apparent places of the Stars contained in WOLFER'S *Tabulæ Reductionum*, except α and δ Ursæ Minoris, have been derived from that work; the reductions of the rest from the *Tables to facilitate Reductions* of the American Ephemeris. These reductions include the terms of the formulæ on pages 260 and 497, so far as sensible, except those depending on the moon's longitude. The terms depending on 2 ☾ have, however, been applied to the four stars whose places are given for every day. The values of these terms for seven circumpolar stars, computed for 1870, are given in Table IV. of this Appendix.

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[*] PETERS' *Numerus Constans Nutationis*, p. 71.

[†] Ibid., pp. 66 and 71.

[‡] STRUVE'S *Constant de l'Aberration*, p. 47.

APPENDIX.

To the position of Sirius, as derived from Wolfers, (the correction of the "*Tabula Subsidiaria*" being omitted), have been applied the terms given by Auwers,[*]

$$q=+0^{s}.0647-0^{s}.000718\ (t-1860)+0^{s}.1510\ \cos\ (u+\ 1^{\circ}\ 6')$$
$$r=-0''.630\ -0''.00044\ \ (t-1860)+1''.445\ \ \sin\ (u+23^{\circ}\ 30')$$

in which u, the eccentric anomaly from the inferior apsis, is found by the formula

$$u-e\ \sin\ u=n\ (t-T),$$

from the elements

$T=1793.830$, passage through the inferior apsis,
$e=\ \ 0.6010$, the eccentricity,
$n=\ \ 7^{\circ}.28475$, mean annual motion in orbit,
$49^{y}.418$, period of revolution.

The Mean Places of such of the Moon-culminating Stars as are not found in the list of standard stars, have been taken in order of preference from the *Almanac Catalogue of Zodiacal Stars printed for the use of the American Ephemeris and Nautical Almanac, Washington*, 1864; *the Greenwich Twelve-Year Catalogue;* and the *Catalogue of the British Association.*

The Ephemeris of the Sun[†] is constructed from Hansen and Olufsen's *Tables du Soleil*, Copenhagen, 1853. The Sun's rectangular equatorial coördinates have been computed from the longitudes and latitudes by the following formulæ:

$$\begin{aligned}
X &= R\cos\lambda\\
Y &= R\sin\lambda\cos\omega-19.3\ R\,\beta\\
Z &= R\sin\lambda\sin\omega+44.5\ R\,\beta\\
X' &= X+Y\sec\omega\,\Delta\lambda\\
Y' &= Y-X\cos\omega\,\Delta\lambda+Z\,\Delta\omega-\ 9.4\ \tau\ R\sin(\odot+187^{\circ})\\
Z' &= Z-X\sin\ \omega\,\Delta\lambda-Y\,\Delta\omega+21.7\ \tau\ R\sin(\odot+187^{\circ})
\end{aligned}$$

in which λ, β and ω are referred to the equinox and ecliptic of the date; $\Delta\lambda$ is the reduction of longitude for precession and nutation from Jan. 0; $\Delta\omega$ the reduction of the mean to the apparent obliquity; τ the part of the year since Jan. 0; and the numerical coefficients are in units of the 7th place of decimals.

The mean equatorial Horizontal Parallax of the Sun, adopted from Prof. Newcomb's *Investigation of the Distance of the Sun and the Elements which depend on it*,[‡] is $8''.848$. The adopted Semidiameter of the Sun at the Earth's mean distance is $16'\ 2''$.

The Ephemeris of the Moon has been constructed from Peirce's *Tables of the Moon, 2d edition*, Washington, 1865. They include the *Tables of the Moon's Parallax* constructed from Walker's and Adams's formulæ.

The Semidiameter of the Moon has been computed from the Moon's Horizontal Parallax by the formula,

$$S=.272274\ \pi+2''.5.$$

A semidiameter $2''.5$ less is found to be better adapted for the computation of eclipses and occultations.

The Ephemeris of Mercury has been derived from the Tables of Prof. Winlock, which are based on the theory of Le Verrier, published in the Additions to the *Connaissance des Temps* for 1848.

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[*] *Astronomiche Nachrichten*, No. 1506.

[†] From Carlini's Tables before 1858.

[‡] *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1865, Appendix II.

CONSTRUCTION OF THE ALMANAC.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from those of **Lindenau**, in a form similar to that adopted for the Lunar Tables: applying **Airy**'s Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. **Hugh Breen**'s results contained in his paper on the *Corrections of* **Lindenau**'s *Elements of the Orbit of Venus*, &c., published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from **Le Verrier**'s *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0:

$$\begin{aligned}
L &= 289^\circ\ 51'\ 53''.5 + 2106691''.706\,t. \\
\pi &= 129\ \ 32\ \ 59.6 + 49''.57459\,t. \\
\Omega &= 75\ \ 23\ \ 27.3 + 32''.88424\,t. \\
i &= 3\ \ 23\ \ 34.6 + 0''.04363\,t. \\
e &= 1410''.6847 - 0''.11157\,t. \\
n &= 2106641''.438 \\
a &= 0.7233323
\end{aligned}$$

The Ephemeris of Mars is derived from manuscript Tables constructed from **Lindenau**'s Tables in the same manner as the Tables of Venus. Mr. **Hugh Breen**'s results contained in his paper *On the Corrections of* **Lindenau**'s *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and **Le Verrier**'s secular variations of the elements are likewise adopted. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0:

$$\begin{aligned}
L &= 320^\circ\ 13'\ 33''.87 + 689101''.1527\,t. \\
\pi &= 333\ \ 23\ \ 17.84 + 65''.9990\,t. \\
\Omega &= 48\ \ 25\ \ 55.29 + 27''.6997\,t. \\
i &= 1\ \ 51\ \ \ 2.20 - 0''.02141\,t. \\
e &= 19238''.75 + 0''.18549\,t. \\
n &= 689050''.8927 \\
a &= 1.5236915
\end{aligned}$$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from **Bouvard**'s Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The Ephemeris of Saturn is derived from **Bouvard**'s Tables. The perturbations produced by Jupiter, and the change of the Great Inequality since 1840, have been increased by $\frac{1}{50}$ of their value. **Adams**'s Table in the *British Nautical Almanac* for 1851 has been substituted for **Bouvard**'s Table XLII. The following corrections of the elements for 1855.0 have also been introduced:

corr. mean long. $= + 4''.9$

corr. long. of node $= - 143''.0$

corr. inclination $= - 5''.7 + 0''.0149\,t.$

The Ephemeris of Uranus is derived from the elliptical portion of **Bouvard**'s Tables, with **Le Verrier**'s corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel* (*dite Uranus*), published in the *Connaissance des Temps* for 1849, and also **Peirce**'s corrections and perturbations arising from the influence of Neptune.

The Ephemeris of Neptune is derived from Prof. **Newcomb**'s *Tables of Neptune*, Washington, 1866.

APPENDIX.

The eclipses and elongations of Jupiter's Satellites are computed from **Damoiseau's** Tables.

The semidiameters of the Planets are computed from the following values:

	Semidiameter.	Log Dist.	Authority.
Mercury	3″.34	0.00	Le Verrier, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars (polar)	2.842 ± 0.057	0.25	
Jupiter (polar)*	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Jupiter (equat.)	20.00	0.70	
Saturn (equat.)	9.38	0.95	

The apparent elements of Saturn's Rings are computed from Bessel's data, except those for Bond's dusky ring.

The Tables for the eclipses of the sun are adapted to the modification of Bessel's formulæ, suggested by T. Henry Safford, jr. The formulæ are given in Peirce's *Spherical Astronomy* and Chauvenet's *Spherical and Practical Astronomy*, Vol. I.

The elements for occultations of stars by the moon are adapted to Bessel's method in the *Astronomische Nachrichten*, Vol. VII., and the *Berliner Astronomisches Jahrbuch* for 1831. The formulæ are also to be found in Chauvenet's *Astronomy.*

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the stereotype plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

The principal computations of the Ephemeris have been distributed in the following manner:

The Sun has been computed by Mr. Eastwood; the Ephemeris of the Moon and the Lunar Distances by Professor Runkle and Mr. Wright. Mercury has been computed by Mr. Austin, Venus by Mr. Austin, Mars by Mr. Oliver, Jupiter by Professor Kendall, Saturn by Professor Van Vleck, Uranus by Mr. Ferrel, and Neptune by Mr. Wiessner. The Fixed Stars and the General Constants for Reduction have been computed by Mr. G. W. Hill, and the Occultations by Mr. Downes, assisted by Mr. Wiessner. The Eclipses have been computed and the Charts projected by Mr. Wright. The Table of Positions of Observatories, orginally compiled by Dr. B. A. Gould, was revised by him for the volume for 1870. The results of the most recent determinations have been incorporated.

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* In the volumes for 1858 to 1869 inclusive 19″.19, given erroneously in the Appendix for 1855, has been used for the Washington Ephemeris.

TABLE I.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval.		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

Difference of the Proportional Logarithms in the Ephemeris.

		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	13
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	18
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	26
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	32

Difference of the Proportional Logarithms in the Ephemeris.

		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side-real.	$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807		
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7	.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8	.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9	.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10	.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11	.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12	.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13	.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14	.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15	.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 1.599	1 11.428	16	.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17	.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18	.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19	.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20	.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21	.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22	.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23	.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24	.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25	.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26	.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27	.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28	.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 3.728	1 13.558	29	.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30	.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31	.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32	.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33	.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 4.547	1 14.377	34	.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35	.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 4.875	1 14.705	36	.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37	.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38	.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39	.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40	.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41	.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42	.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43	.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44	.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45	.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46	.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47	.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48	.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49	.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50	.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51	.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52	.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53	.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54	.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55	.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56	.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57	.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58	.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59	0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.*

Sidereal.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443		
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2	.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3	.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4	.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5	.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6	.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7	.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8	.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9	.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10	.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11	.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12	.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13	.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14	.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15	.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16	.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 20.399	2 30.228	17	.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18	.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19	.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20	.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21	.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22	.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23	.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24	.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25	.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26	.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27	.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28	.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29	.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30	.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31	.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32	.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33	.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34	.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35	.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36	.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37	.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38	.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39	.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40	.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41	.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42	.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43	.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44	.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45	.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46	.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47	.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.648	2 25.477	2 35.307	48	.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49	.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50	.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51	.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52	.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53	.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54	.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55	.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56	.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57	.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58	.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59	0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080		
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.691	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19	.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	.074
28	2 41.869	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	142
53	2 45.956	2 55.785	3 5.615	3 15 444	3 25.274	3 35.104	3 44.933	3 54.763	53	.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995		
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14	.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	4 1.932	1 11.788	17	.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	.134
50	0 8.214	0 18.070	0 27.927	0 37,783	0 47.640	0 57.496	1 7.353	1 17.209	50	.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847		
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	2	.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28.340	3	.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	4	.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 8.956	2 18.812	2 28.668	5	.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	6	.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	7	.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	8	.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	9	.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 9.777	2 19.633	2 29.490	10	.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	11	.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	12	.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	13	.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	14	.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	15	.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	16	.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	17	.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	18	.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	19	.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	20	.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	21	.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	22	.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	23	.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	24	.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	25	.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22.262	2 32.118	26	.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12.570	2 22.426	2 32.283	27	.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	28	.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	29	.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	30	.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	31	.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	32	.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	33	.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	34	.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	35	.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 4.192	2 14.048	2 23.905	2 33.761	36	.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	37	.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	38	.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	39	.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	40	.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	41	.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	42	.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	43	.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	44	.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	45	.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	46	.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	47	.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	48	.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	49	.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	50	.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	51	.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36.389	52	.142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	53	.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	54	.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	55	.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	56	.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	57	.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	58	.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539	59	0.162

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s		
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699	s	s
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15	.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	0.162

66

TABLE IV.

TABLE GIVING, FOR SEVEN POLAR STARS, THE CORRECTIONS OF THE APPARENT PLACE WHICH DEPEND ON THE ARGUMENT 2 ☾ IN NUTATION.—1870.0.

☾ or ☾—180°.	*α* Urs. Min.		51 Cephei.		32 Camelop.		*ε* Urs. Min.		*δ* Urs. Min.		*λ* Urs. Min.		*σ* Octantis.		☾ or ☾—180°.
	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	
°	s	″	s	″	s	″	s	″	s	″	s	″	s	″	°
0	-.233	+.03	+.021	+.09	+.056	-.02	+.011	-.09	-.006	-.09	-.150	-.08	+.013	-.09	90
2	.238	.02	.012	.09	.056	.01	.013	.08	-.001	.09	.133	.08	-.018	.09	92
4	.242	.02	+.003	.09	.055	-.01	.015	.08	+.005	.09	.115	.08	.049	.09	94
6	.245	+.01	-.005	.09	.055	.00	.016	.08	.010	.09	.097	.08	.080	.09	96
8	.246	.00	.014	.09	.054	.00	.018	.08	.016	.09	.078	.09	.110	.09	98
10	-.246	.00	-.023	+.09	+.052	+.01	+.019	-.07	+.021	-.08	-.059	-.09	-.139	-.08	100
12	.246	-.01	.031	.09	.051	.01	.021	.07	.026	.08	.040	.09	.168	.08	102
14	.244	.01	.039	.08	.049	.02	.022	.07	.031	.08	-.020	.09	.196	.08	104
16	.241	.02	.048	.08	.047	.03	.023	.06	.036	.08	.000	.09	.224	.08	106
18	.237	.02	.056	.08	.045	.03	.024	.06	.041	.07	+.019	.09	.250	.07	108
20	-.230	-.03	-.063	+.08	+.042	+.04	+.025	-.05	+.046	-.07	+.039	-.08	-.275	-.07	110
22	.224	.03	.071	.07	.039	.04	.026	.05	.050	.07	.058	.08	.298	.07	112
24	.216	.04	.078	.07	.036	.05	.027	.04	.054	.06	.078	.08	.320	.06	114
26	.207	.04	.084	.07	.033	.05	.027	.04	.058	.06	.097	.08	.341	.06	116
28	.197	.05	.091	.06	.030	.06	.028	.03	.062	.05	.115	.08	.360	.05	118
30	-.187	-.05	-.096	+.06	+.027	+.06	+.028	-.02	+.065	-.05	+.133	-.07	-.377	-.05	120
32	.175	.06	.102	.05	.023	.06	.028	.02	.068	.04	.150	.07	.392	.04	122
34	.162	.06	.107	.05	.020	.07	.028	.01	.071	.04	.166	.07	.406	.03	124
36	.149	.07	.111	.04	.016	.07	.038	-.01	.073	.03	.182	.06	.417	.03	126
38	.135	.07	.115	.03	.012	.07	.028	.00	.075	.03	.196	.06	.426	.02	128
40	-.120	-.07	-.118	+.03	+.008	+.07	+.028	+.01	+.077	-.02	+.210	-.05	-.434	-.02	130
42	.105	.07	.120	.02	+.004	.08	.027	.01	.078	.01	.223	.05	.439	.01	132
44	.089	.08	.122	.02	.000	.08	.026	.02	.079	-.01	.235	.04	.442	-.01	134
46	.073	.08	.124	+.01	-.004	.08	.026	.02	.079	.00	.245	.04	.443	.00	136
48	.056	.08	.125	.00	.007	.08	.025	.03	.079	.00	.254	.03	.442	+.01	138
50	-.039	-.08	-.125	.00	-.011	+.08	+.024	+.04	+.079	+.01	+.262	-.02	-.438	+.01	140
52	.022	.08	.125	-.01	.015	.08	.023	.04	.078	.02	.269	.02	.433	.02	142
54	-.005	.08	.124	.01	.019	.08	.021	.05	.077	.02	.275	.01	.425	.02	144
56	+.012	.08	.122	.02	.022	.08	.020	.05	.075	.03	.279	-.01	.415	.03	146
58	.029	.08	.120	.03	.026	.08	.018	.06	.073	.03	.282	.00	.404	.04	148
60	+.046	-.08	-.117	-.03	-.029	+.08	+.017	+.06	+.071	+.04	+.283	+.01	-.390	+.04	150
62	.063	.08	.114	.04	.033	.08	.015	.07	.069	.04	.283	.01	.374	.05	152
64	.079	.08	.110	.04	.036	.07	.014	.07	.066	.05	.281	.02	.357	.05	154
66	.095	.08	.106	.05	.039	.07	.012	.07	.063	.05	.279	.02	.338	.06	156
68	.111	.07	.101	.05	.041	.07	.010	.08	.059	.06	.275	.03	.317	.06	158
70	+.126	-.07	-.095	-.06	-.044	+.06	+.008	+.08	+.055	+.06	+.269	+.03	-.294	+.07	160
72	.141	.07	.089	.06	.046	.06	.006	.08	.051	.07	.253	.04	.271	07	162
74	.154	.06	.083	.07	.048	.06	.004	.08	.047	.07	.255	.04	.245	.07	164
76	.167	.06	.076	.07	.050	.05	+.002	.08	.043	.08	.245	.05	.219	.08	166
78	.180	.06	.069	.07	.052	.05	.000	.09	.038	.08	.235	.05	.192	.08	168
80	+.191	-.05	-.062	-.08	-.053	+.04	-.002	+.09	+.033	+.08	+.223	+.06	-.163	+.08	170
82	.201	.05	.054	.08	.054	.04	.004	.09	.028	.08	.210	.06	.134	.08	172
84	.211	.04	.046	.08	.055	.03	.006	.09	.023	.09	.197	.07	.105	.09	174
86	.219	.04	.038	.08	.056	.03	.008	.09	.017	.09	.182	.07	.074	.09	176
88	.226	.03	.029	.09	.056	.02	.010	.09	.012	.09	.166	.08	.044	.09	178
90	+.233	-.03	-.021	-.09	-.056	+.02	-.011	+.09	+.006	+.09	+.150	+.08	-.013	+.09	180

NOTE.—When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed.
The Moon's Mean Longitude, ☾, may be found on page 344.